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Planning for curriculum revision and development: digest of selected studies

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Planning for curriculum revision and development :

digest of selected studies

UNESCO, PARIS

PREFACE

This number Of Education Abstracts *was prepared in the first instance at the recommendation of the International Advisory Committee on the School Curriculum. It also continues the policy established in 1957 of providing material related to the main topic of discussion at the International Conference on Public Education – this year's Conference will be on the primary curriculum. It is expected that this policy will be maintained, and that a double issue will be prepared for the 1959 Conference. Another point of interest is that the abstracts in this issue are of a different nature from those which have appeared previously. This is fully explained in the introduction.*

The Secretariat would like to express its appreciation to the International Bureau of Education at Geneva for its co-operation in the preparation of this issue.

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INTRODUCTION

The need for digests of curriculum studies(1)

At its first session in 1956, the International Advisory Committee on School Curriculum suggested that Unesco "should serve as a clearing house, assembling and disseminating information about school curricula, such exchange of information being one form of international assistance". (2) The Committee therefore recommended that the Secretariat of Unesco should prepare a continuing series of publications containing digests of significant scientific studies and research dealing with the school curriculum and annotations of other types of material in the same field, which could be carried out by the Secretariat as one of its continuing activities and services in connexion with school education.

Service of this kind is not altogether new in Unesco. Since 1950, the Education Clearing House has been issuing a monthly publication entitled Education abstracts, each issue of which deals with one relatively broad educational field. One of these, entitled "The primary school curriculum", was published in 1955. It includes, in addition to a summary of the significant developments and trends in primary school education since World War II, an annotated bibliography of 46 publications from some thirty countries in all regions of the world.

What was intended in the Advisory Committee's suggestion, however, was something quite different, although not unrelated to what has already been done. The ordinary abstract or annotated bibliographical reference is generally intended for librarians, students and research workers in education. It tells what the reader may expect to find in the book, monograph, pamphlet, or magazine article referred to. He must, however, read the work in order to obtain the information required.

The new series of digests is intended primarily for teachers, supervisors, administrators, curriculum workers, and others in charge of preparing and implementing school curricula, and only secondarily for librarians, students and professors of education. Each digest is detailed enough to give some of the most significant findings or information which the reader can immediately utilize to improve his work as a teacher, a curriculum specialist, or as an educational worker in some other field, without having to read the original work.

Instead of a bare statement to the effect that the book deals with mechanisms and procedures of curriculum revision, an actual outline is given of the various stages discussed; if an article deals with problems of the curriculum at the primary level, the problems themselves are listed; if the work in question is a discussion of trends, the various trends are described; if it deals with curriculum design and organization, the curriculum design and organization found to be most effective are explained briefly; and so on.

One of the main reasons for this arrangement is that, in many of the countries to which the publication will be sent and for which the service is provided, money, particularly hard currency, with which to purchase educational material, is in short supply. In many cases, too, the works listed are in foreign languages, and would not be useful unless they were translated. Furthermore, the material may be long and complicated and the reader may not have either the patience, the technical preparation or the time to study it carefully in order to derive some value from it for the improvement of his work. Then again, certain works may be out of print or may be available only in limited editions. For these and other reasons it was decided to issue the digests in a form in which they could be used directly by as many people as possible.

This is not to say, of course, that the digests can and will take the place of the original sources entirely. To get the most out of each source it would be still better to read it in its original form than to rely upon the digest, however detailed the latter may be. What is meant here is simply that, for the type of reader for whom this publication is intended and for the reasons given, the kind of summary provided would serve a more useful purpose than ordinary abstracts.

Obviously, the number of sources that can be dealt with in an issue of this kind will necessarily be more limited than in the ordinary abstracts and

(1) For a more detailed discussion of the rôle of research in curriculum revision and development, see: Chapter III of "Mechanisms of curriculum revision and the organization of curriculum research facilities". Educational studies and documents, no. 28, 1958, Paris, Unesco. (In press.)

(2) Improvement of school curriculum; report of the first session of the International Advisory Committee on the School Curriculum. Paris, Unesco. 1957, p. 3. UNESCO/ED/151.

annotated bibliographies. However, the publication is intended to be a continuing series of at least one issue a year.

Digests of curriculum studies

1. Material to be included. Under this heading will be included digests of selected scientifically conducted studies dealing with the school curriculum; such studies include:

i. Research studies in the social sciences which have a significant bearing upon the school curriculum, community and curriculum surveys, comparative studies of school curricula, etc. (1)

ii. Experimental work and case studies, mainly in the fields of education and psychology, which are planned with a view to their bearing upon the school curriculum.

iii. Action research - less scientifically controlled experimental work - undertaken by teachers and others under normal school conditions.

2. Form of the digest. In general, subject to modification to suit individual cases, the digest will include the following information:

i. Background and purpose of the study - emphasizing specially the parts of significance with relation to the curriculum.

ii. Method of procedure - including statement of limitations either from the author's or the reviewer's point of view.

iii. Findings - both statistical and descriptive - with an indication of trends and conclusions.

iv. Implications with respect to the curriculum - bearing upon important curriculum problems, aspects and/or levels of education, methods of teaching and organization of material for the various subject matter fields and extra-curricular activities, evaluation of the results of education, etc.

v. Assessment (either by the reviewer or the author) of the value of the study of research - including indications as to further research suggested or references to sources which may throw further light on the subject.

Comments and suggestions from readers

This issue is an experimental one. Only those who use it can say to what extent it serves their purposes. It is hoped, therefore, that readers - especially teachers, supervisors, curriculum specialists and other workers in education, for whom this publication is intended - will send their comments and suggestions for possible improvements.

The coverage of this issue is limited to what is available in the Unesco Library and the Education Clearing House and the International Bureau of Education Library in Geneva. It is hoped that Unesco National Commissions, Departments or Ministries of Education and similar bodies will make available for the preparation of future issues of this publication, bibliographies of selected studies and other types of material on the school curriculum, and, if possible, the actual material itself.

(1) Although such studies are not represented in the present issue of Education abstracts, it is hoped that some will be included in future issues dealing with the curriculum.

PART I

CURRICULUM SURVEYS, AND COMPARATIVE STUDIES OF CURRICULA

A. Curriculum survey

1. Columbia University. Teachers College. Institute of Field Studies. Public education and the future of Puerto Rico; a curriculum survey, 1948-49. New York, Bureau of Publications, Teachers College, Columbia University. 1950. 614 p.

I. Background and purpose

Early in 1948, the Acting Commissioner of Puerto Rico requested the Institute of Field Studies of the Teachers College, Columbia University, to make a survey of the curriculum of the public schools of Puerto Rico, with special reference to: (a) objectives and procedures in elementary and secondary education; (b) provision for vocational and adult education; (c) the relation of school buildings and the school building programme to the curriculum; (d) evaluation, testing, and measurement in relation to the curriculum; (e) basic language of instruction in schools; (f) problems concerning child development and social and economic conditions in Puerto Rico; and (g) implications of curriculum revision proposals for the administrative organization of the Department of Education.

II. Procedure followed

1. The personnel of the survey included: a survey staff of 13 persons, a planning committee of 3 members, 1 consultant, 4 research assistants, 1 editorial assistant, and 1 secretarial assistant.

2. The survey staff met during the summer of 1948, and in September 1948 the planning committee visited Puerto Rico. Meetings were held with lay and professional groups, and various types of rural and urban schools were visited. At this time certain points of view were put forward by the representatives of the survey staff and discussed widely. These points of view and their implications with reference to the survey were as follows:

(a) Education should contribute to the improvement of personal and social living. It was understood that the survey would be mainly concerned with the contribution that the programme of education in Puerto Rican schools was making or might make to this end.

(b) Education should be planned to meet the peculiar needs or problems of the culture concerned. It was agreed that the survey staff would assess the particular problems of Puerto Rico and make recommendations which would be both appropriate to the culture of the area and realistic in terms of available resources.

3. In respect to the actual method of the survey, three points of agreement emerged from various discussions:

(a) The survey should be carried out with as full participation by Puerto Rican educators as time and resources would permit. It was agreed that every effort would be made to capitalize on the best thinking of all interested in education.

(b) The survey was to cover the curricula of all schools directly under the Department of Education. Intensive study, however, was to be made of a representative sampling of different types of programmes and of schools located in different parts of the island. Additional information for the survey was to be obtained from official documents and educational material, conferences with individuals, brief questionnaires circulated among various groups, and meetings of representatives from all school districts.

(c) The development of an educational programme was recognized to be a long-term process. It was agreed, therefore, that recommendations would include some indication as to the long-term objectives toward which the schools should work, as well as to immediate action which might be taken.

4. On this same occasion certain special areas were singled out for more intensive study, and appropriate staff provisions were made.

5. In a period of three weeks in October and November 1948, the survey staff completed most of the field work. In addition to extensive visits to selected schools, the field work included individual conferences with representatives of various groups and one large meeting with representatives from each school district. This period of field work was followed in January 1949, by further field work on the occasion of a visit of the director of the survey staff, and the presentation of a preliminary report.

6. At the end of March 1949, seven members of the survey staff returned for additional field work; two members checked preliminary findings,

and five arranged area meetings in order to discuss major recommendations with representatives from the various districts. Additional conferences for the same purpose were held with representatives of the staff of the University of Puerto Rico.

7. Throughout the whole study members of the central office staff of the Department of Education generously spent a great deal of time providing information and assisting in many ways. Enthusiastic co-operation was also received from other educational, lay, and government groups.

III. Findings and recommendations

This general heading will cover Parts I, II and III of the book. Part I describes the many factors influencing child development within the cultural setting of Puerto Rican life. It tells what values are held supreme by the people and what their aspirations are for the future, and gives an assessment of the socio-economic resources and potentialities of the island with respect to these values and aspirations. This information provided the basis for the formulation of educational objectives for primary, secondary and adult education, and for the selection and organization of the content and methods of education. Part III deals with a number of special problems which must be solved if the revised curriculum is to be effectively implemented.

Part I
The bases of educational objectives

1. What are the facts with respect to the socio-economic potential of Puerto Rico? To answer this question, a study was made of government reports, statistical studies, surveys, etc. in order to describe present conditions with regard to the climate and topography of the island and its resources; the rate of growth of the population; productivity in agriculture and industry; the method of planning that has been used to meet the growing needs of the people; the standard of living in the island with respect to housing, sanitation, nutrition and health, and recreation. An indication is thus given, on the basis of the information gathered, as to the next step to be taken in improving, through education, the conditions and standards of living of the people of Puerto Rico.

2. What are the values most cherished by the people, and what are their hopes and aspirations for themselves and for their children? The answer to this question was obtained by observing the way the people live, by hearing their views on issues and problems that concern them, by questioning young people - for example, the students of one of the high schools were asked what their plans were after graduation, the students of another high school "what things not taught in school they would like to learn".

3. The findings revealed four basic needs to develop awareness of current values, their sources, and their influence on behaviour; to develop in children and youth a sense of realism which would allow practical planning without lowering the level of aspiration; to clarify values and develop consistency of values by interpreting them in terms of current problems; and, for local educators, to be aware of the cultural factors which influence the children, youth and adults with whom they work.

Part II
The objectives and content of education

Two questions were raised: first, what should be the immediate objectives of education in Puerto Rico, at the three levels: primary (children), secondary (youth), and adults? Second, what should be the content of the curriculum for each level, and how should it be organized and taught? On the basis of the analysis of data, as indicated in Part I, and after consultation with Puerto Rican educators, the following were formulated as educational objectives for Puerto Rico: (1) the improvement of health, (2) education for economic efficiency, (3) the development of a creative and aesthetic approach to living, (4) the development of social effectiveness, (5) the development of communication and problem-solving skills, and (6) the recognition of (democratic) values.

1. The improvement of health. In order to determine what type of action was necessary to achieve this objective, the Institute made studies, first, of the health concerns of all the people, and second, of the experiences and problems of children, youth and adults with regard to health. What did children, young people and adults eat - what were their dietary preferences, how adequate were their diets; what were their eating habits; what were the most common diseases, how effectively were they prevented or controlled; what was the condition of the environment in regard to health; was the problem of mental health being effectively solved; how were the ill and the handicapped treated? The answers to these questions formed the basis of the health education curriculum for children (primary grades), youth (secondary schools) and adults. After discussion with Puerto Rican educators, including teachers, parents and other lay groups, it was decided that the curriculum for health education should include the following: (a) an understanding of the principles of nutrition and the development of good eating habits; (b) the prevention of communicable and parasitical diseases; (c) environmental sanitation; (d) mental health; (e) care of the ill and handicapped; (f) safety education; and (g) knowledge and use of health resources. The appropriate subject matter was suggested for each of these sub-divisions, together with the manner in which it should be organized and related to current health problems.

2. Education for economic efficiency. The curriculum for this phase was determined, first,

by the definition of economic efficiency, and second, by the resources available to achieve it. The analysis of the socio-economic potential of Puerto Rico referred to in Part I showed that the island had many resources - a vast area of fertile soil, abundant water power, enormous deposits of minerals, excellent climate, and an energetic ambitious people, desirous of living a full life. In view of these considerations, the Institute set as the task of primary, secondary and adult education, the following: (a) education for making a living, which should include, in addition to vocational training, an understanding of and suitable attitudes towards the world of work; (b) learning how to live on what one earns and how to use incomes to the best advantage; (c) conservation and intelligent use of the more limited resources of the country, i.e. material and manpower; and (d) an understanding of the place of Puerto Rico in the region and in the world. The approach adopted in each case varies according to the educational level. For children in the primary grades, it entails use of the opportunities afforded in the classroom, in the playground and in the community (extra-curricular activities) to develop sound attitudes towards work and some of the abilities and skills basic to the various types of occupation. For youth in secondary schools, it entails an introduction to the various types of vocation by means of pre-vocational training designed to give the student a chance to orient himself and to explore both occupational and cultural fields. It also entails educating young people as responsible members of the "consumer" public. For adults, it entails extension of opportunities for vocational training or retraining in existing vocational schools, evening classes, etc. and provision for a greater variety of occupational training - for both service veterans and others.

3. The development of creative and aesthetic approach to living. This question is to be considered from two points of view preserving the unique features and characteristics of the people (their inherent love of music, dancing and all other forms of artistic expression), and building on these for a better future. The Institute found that at all levels of education little time was given to providing children, youth and adults with opportunities for aesthetic expression in their surroundings and personal appearance and for living more graciously with other people. The curriculum at all levels should therefore be designed to fill this gap. For children in the primary grades, opportunities should be provided: for musical activities - singing, music appreciation, instrumental music, reading of musical notation, folk song and dance, and rhythmic activities; for artistic activity - drawing, modelling, painting, stencilling, engraving - and the use of local materials (bamboo, shells, guajana, higuera, fibres, roots and seeds); for experience in the linguistic arts; for an understanding of community problems; and for physical education and recreation. For youth in the secondary schools: in addition to the above-mentioned activities, experience in home-making - personal appearance and manners, interior decoration, housing; in handicrafts, industrial arts and agriculture. For adults: besides the activities mentioned for youth, experience in vocational shops and schools - designing, etc.; in on-the-job training - wood-carving; in industrial schools for rehabilitation - fashioning artificial limbs, weaving rugs, etc.

4. Developing social effectiveness. The objectives of education for social effectiveness were first defined in terms of the following: (a) the improved production and use of food, clothing and shelter, and the establishment and fuller use of medical, recreational or other services for the entire community, and (b) the extent to which individual members had a sense of belonging to and being needed in the community. To achieve these results, the curriculum for the various levels must be greatly enriched and vitalized. For children in the primary grades, experiences were needed in which parents, children, and teachers plan significant major goals and activities for home and family life, for community improvement, and for intergroup relations. In addition, for youth in the secondary schools, new means should be devised of focusing the child's experience more sharply on real situations, allowing him to take part in activities designed to bring about better living for all - adding to the family income, earning money in practical ways, by assisting farmers in terracing, planting cover crops, etc., helping in home decoration, and so on. For adults, provision should be made for participation in community improvement and in matters that concern school education - school budget, school reorganization, curriculum revision and development; for experience in adult intergroup relations - establishment of industrial, consumer and marketing services, improvement of urban-rural relationships, development of workers' education services, and development of adult orientation courses; and for participation in the political affairs of Puerto Rico - legislation in regard to community education, etc. Time should be allotted in the school programme for teachers to help students to study and to serve the community.

5. Development of communication and problem-solving skills. Because of the fact that home situations provide few opportunities for the use of the background skills of reading, listening, and writing - 88.2% of urban families have no radio, 65.3% of rural and 49.3% of urban families have no clock, 55.6% of all families have no books, etc. - the need for the schools to provide meaningful situations for the use of such skills and for their extension into the home and the community has become more urgent than ever. The same may be said with regard to problem solving. For children in the primary schools, there is a need for more informal discussion in which they can

express their views in any form - orally or in writing - which means less of the question-answer method of teaching. For youth in the secondary schools, opportunities must be provided not only for informal and easy conversation but also for the spontaneous discussion of problems. At this stage methods of problem-solving should be taught in order to help the students to state and analyse a problem, to suggest and test solutions, and to verify the results of their thinking. For adults, the development of communication skills could be encouraged through working together, working with new acquaintances, and working in new environments.

6. Recognition of values. Value-aspirations among Puerto Ricans may be classified under four main headings: (a) respect for individuals; (b) respect for democratic action; (c) respect for the scientific method of problem solving; and (d) a full life. For children in the primary grades, situations should be provided to enable them to learn to take turns in speaking, to limit contributions reasonably, to express differences of opinion rationally and pleasantly, and to respect the opinions of others. For youth in secondary schools, the student council has proved an excellent means of developing attitudes of respect for the rights of others and of self-respect. Home-making classes could serve a similar purpose. For adults, one device found effective was to give them opportunities for participation in planning activities and programmes for themselves.

Part III
Special problems and plans for action

The effective implementation of the school curriculum calls for the extension and equalization of opportunities for education, well-trained teachers, functional school buildings, community co-operation, a wide variety of teaching materials, and sound leadership. The Institute endeavoured to isolate the particular problems arising in each of these respects and to suggest plans of action.

1. Equalizing and improving educational opportunities. After giving the facts on school attendance, withdrawal from school, teacher-pupil relations, etc., this section suggests the improvement and redirection of the opportunities open to children, youth and adults for increased and improved education. Among the suggestions given are: special half-day sessions for children, comprehensive high schools for youth, and better legislation for the extension of adult education.

2. Organization of the community for its own improvement. Particular emphasis is placed upon the functions which the school should assume in community co-operation and education, such as: (a) to participate, along with representatives of other agencies, in the establishment of objectives; (b) to identify, with students and lay citizens, specific tasks which can be undertaken by each level towards the attainment of these goals; (c) to serve as a chief resource in collecting evidence to clarify community goals and to help solve problems; (d) to assume leadership in developing programmes of action in schools; (e) to help students and teachers to evaluate the results of experience in an effort to improve skills and attitudes in group planning; and (f) to plan new and improved techniques for educational co-operation on community problems.

3. Language instruction. A six-year plan of teaching English as a second language was recommended, together with appropriate steps to be taken in connexion with the improvement of methods and supervision, the preparation of materials, and the evaluation of the approaches now under experimentation.

4. Buildings and equipment and the instructional programme. Matters requiring urgent attention included: (a) the repair and improvement of sanitary arrangements; (b) the provision of a seat and a desk of suitable size for each child; (c) more adequate storage provision; (d) improvement of lighting facilities; (e) beautification of school grounds; (f) inclusion in new building plans of "all-purpose" rooms, outdoor shelter areas and amphitheatres, residences for teachers, and housing for related educational agencies; (g) new buildings to accommodate increased enrolments; and (h) transfer of authority for school building construction to the Department of Education.

5. Teaching materials. After considering the use of varied types of material - books, pamphlets, audio-visual aids, community resources, libraries, etc., the Institute made the following recommendations: (a) that a plan should be developed whereby at least the basic teaching materials for Puerto Rican students should be prepared in Puerto Rico; (b) that the teachers should be given the opportunity to use the community as a laboratory for learning; (c) that the supply of appropriate materials of all types should be substantially increased; etc.

6. Evaluating the school programme. Basic considerations to be kept in mind in this respect were: (a) recognition of the fact that no programme of evaluation can be effective unless it is based upon an understanding of the objectives in view and of the situations in which learning takes place; (b) delegation to teachers of the responsibility for evaluation; (c) an understanding of the instruments of evaluation, of their use and application, and of the treatment of data gathered by such means; and (d) a comprehensive view of education in its complete context.

7. Teacher education and the improvement of instruction. Various means of helping teachers in service were suggested: (a) objective understanding of their concerns, needs, interests and problems; (b) co-operative efforts on the part of teachers to solve their own problems; (c) development of their own instructional materials; (d) planning, study and experimentation in their own classes; (e) improvement of teaching methods

through observation of teaching, conferences, staff meetings, and workshops, (f) helpful supervision, (g) travel and study abroad, etc.

8. Organization of the Central Office of the Department of Education for educational leadership. Specific proposals for the reorganization of instructional activities, with the object of developing greater unity and mutual reinforcement among education officials, included the following: (a) that the Assistant Commissioner for Instruction should be freed from administrative and routine duties; (b) that a co-ordinating council should be set up to serve as a policy-making group for all instructional activities; (c) that certain separate activities should be unified; (d) that an advisory committee should be constituted.

B. Comparative studies of school curricula

2. Dottrens, Robert, L'amélioration des programmes scolaires et la pédagogie expérimentale. Neuchâtel, Paris, Delachaux et Niestlé, 1957. 254 p.

I. Background

This study is the report of a Seminar jointly organized by the Swiss National Commission for Unesco and Unesco itself. Fifteen European countries (Austria, Belgium, Czechsolovakia, France, Federal Republic of Germany, Hungary, Italy, Luxembourg, Netherlands, Poland, Sweden, Switzerland, Turkey, Union of Soviet Socialist Republics and United Kingdom) were represented, and their systems of primary education were analysed - where possible against the background of experimental education techniques. The four objects of the Seminar were: to study the primary curricula of the various countries represented so as to discover the positive elements; to consider the general requirements for and the possibilities of primary schooling; to examine the study plans of each country in detail; to give a detailed description of the methods used in each country for the elaboration and modification of curricula; to formulate recommendations for the improvement of curricula in primary teaching in relation to the needs of the individual in the contemporary world, bearing in mind the results of research in education, child psychology and experimental pedagogy.

II. Procedures

Five different questionnaires were circulated to the various countries. The first referred to the structure of educational organization, methods in use for curriculum modification, special problems, and official publications defining and commenting on the aims of education and the school curriculum. The three next questionnaires included detailed questions on the content of grammar, arithmetic and geography courses. The last questionnaire referred to various aspects of teaching such as the age level at which reading is taught, how much homework is given if any, freedom of choice in selection of textbooks, and whether international understanding is included in the curriculum.

Results

From these questionnaires it was possible to see in what ways the various countries differed in conceptions and in what ways they resembled each other. Among others, Austria, France, the Federal Republic of Germany, Italy, Luxembourg, the Netherlands and the United Kingdom place great emphasis on the education of the person. In Hungary, Poland, Czechoslovakia, and the USSR the greatest emphasis is placed on sociological training for integration in a collectivist society.

Thirteen of the countries represented base their study plans on the stages of mental growth of the child. Eight countries, recognizing the importance of syncretism have introduced global teaching, centre of interest methods or Gesamtunterricht over a two-, three- or four-year period in the lower classes. Fourteen countries are in agreement as to the necessity for introducing activity methods into teaching.

Tables were also drawn up showing the duration of compulsory schooling in the various countries, the school entrance age, the total number of weeks of required schooling per year and the number of hours a week at the different levels of primary education. The contents of the curricula were set forth in tabular form indicating the number of hours a week allotted to each subject, thus showing the importance given to each subject in each country. School programmes may be either obligatory for teachers or suggested to them according to the country in question.

A section of the report is given to the consideration of certain closely related problems. It is noted that no country has taken the fatigue factor into account in planning primary education. The report states that research should be undertaken on the effect of child development and growth on the ability to learn, and that this important factor should be taken into account in future curriculum planning.

Homework is reported upon; some countries require that none be assigned, others limit the amount assigned according to the different age levels, and others again rule that homework should not take more than half the time spent in school.

Methods of selection of textbooks are given in

graphic form, showing that the approach in the various countries ranges from complete liberty for the teacher to choose whatever books he wishes, to strict control by the education authority. Other subjects treated in this section are: the relation of the primary to the secondary school; education of the handicapped; the final class of the primary school, in which, in some countries, an effort is made to introduce the pupil to ways of earning a living; guidance; and the training of teachers.

In the study of methods used for the revision and modification of curricula, the different countries mentioned various bodies which are consulted in the matter, although in every case the decision to revise rests with either the central or the regional authority concerned. In some countries consultation with experts is kept to a minimum and in others surveys are made of the opinion of teachers, parents, doctors, school psychologists, educators and secondary school teachers. It was felt that surveys should not be too wide in scope as the public asked for opinions is not necessarily an informed one, and damage can be done when sides are taken on a national scale as a result of popular reactions provoked by incomplete or erroneous information. The public at large cannot be expected to have a thorough understanding of educational problems.

In discussing experimental teaching in relation to curriculum revision, the report outlines a paper by Professor Buyse which gives a critical definition of education and school experimentation, traces the development of experimental pedagogy and gives a brief description of an actual experiment. The latter is subdivided as follows:

(a) The object and necessary conditions.
A scientific study of the pupil;

(b) General problems:
1. Individual differences
2. Theory of learning
3. Theory of mental discipline
4. Intellectual fatigue;

(c) Special questions:
1. The comparison of the relative values of procedures and methods
2. The study of the mental processes involved in the early stages of the different scholastic disciplines.

A further section deals with pedagogical research in the USSR and the work done by the various research institutes of the Academy of Pedagogical Sciences is outlined:

(a) The Institute for the Theory and History of Pedagogy.
The main task of this Institute is to work out the basic problems of pre-school education, didactics, the theory of educating children of the younger, intermediate and older school age-groups in school and at home, school administration, and the study of the history of education in the Soviet Union and abroad. The Institute provides information on these subjects.

(b) The Institute of Educational Methodology.
This Institute's principal function consists of research regarding the content of general and polytechnic education, the development of teaching methods for the individual subjects of the curriculum in secondary schools (individual methodologies), research on methods of adult education, and the development of systems for school equipment. In addition to its scientific research work on current educational problems, the Institute disseminates pedagogical information relating to individual methodologies.

(c) The Institute of Psychology, which deals with problems of general, age-group and educational psychology and provides references and information material in this field.

(d) The Institute of Artistic Education.
This Institute makes a scientific study of questions concerning the aesthetic training of children of pre-school age, and of children engaging in any form of artistic expression (literature, music and singing, drawing) in general educational schools; it also studies problems connected with out-of-school art training. Reference and information material relating to this field of educational science and scholastic method is made available by the Institute.

(e) The Institute for the Training of Handicapped Children.
The particular province of this institution is research connected with the training of the deaf, blind and mentally retarded, and the clinical and physiopathological study of pupils in special schools. It carries out extensive information and consultation work on the education and training of deaf and dumb, blind and mentally retarded children, and of children suffering from various defects of sight, hearing and speech.

(f) The Institute for Physical Education and School Hygiene, which studies problems relating to the theory and methods of the physical education of children of pre-school and school age, the improvement of pupils' health, children's hygiene at home and at school, and the design and arrangement of school buildings from the point of view of health. The Institute supplies information on these problems to educators and doctors of kindergartens and children's homes, and to school-teachers and medical officers.

(g) The Leningrad Institute of Education, which deals generally with questions relating to the educational and training of children of different age-groups and provides reference and information material on these questions.

(h) The Institute for National Schools.
This Institute is concerned with questions relating to methods of teaching the various regional languages, and (as the medium of communication between the different

peoples of the USSR) the Russian language, in national schools. The Institute does a great deal of information and consultation work in this field.

It was pointed out that before any curriculum revision was undertaken, studies should be made on the duration of the school year and the work that teachers are called upon to do in the school. The number of teaching hours a week as shown on school time-tables by no means corresponds to the real duration of working time. Very often the number of school weeks in the year does not take into account various holidays and the time lost at the beginning and end of the school year when lessons are begun slowly and examinations given.

III. Conclusions

The object of education is to teach the student to know how to do things, to know how to behave, and, at the same time, to let him lead as happy a childhood life as possible. Every programme of studies should include three elements: the knowledge to be acquired, the techniques to be mastered, and the best means of satisfying the needs of the social order and of the individual. However, very often the aims of school programmes are much more limited and seek only to prepare the students for passing certain examinations for entrance to secondary education, or, in the case of pupils leaving school at the end of the primary grades, to give them the necessary training to enter active life. Present-day teaching tends to cut the child off from reality and to enclose him in a world which is fast becoming outmoded. It should be remembered that modern progress has reduced the amount of manual labour required in society and that the workman therefore has more time for self-improvement. The use of leisure time is one of the greatest problems of the present day. It is the task of the school to train the minds of its students so that they will learn to become intellectually self-sufficient and use their leisure time profitably.

Both genetic and experimental pedagogy remind the educator that the principal problem is that of the child himself. To follow the old school traditions and sociological arguments is to cut off deliberately the contribution which the educational sciences can make to improving study plans and makes education the only organized section of human activity which does not profit from objective thought and scientific research. More opportunities should be given on a national scale to allow teachers to profit from the results of pedagogical research. Up to the present time this has not been the case.

IV. Steps to be taken in the revision of curricula

The following steps were proposed as a guide to curriculum revision:

1. A critical study should be made of the reasons leading to a decision to modify the programme, and the general direction which the work should take should be fixed.
2. Surveys should be made of school progress at different ages and in the different disciplines.
3. Surveys should be made by means of precise and detailed questionnaires submitted to teachers, inspectors, school principals and professional associations.
4. Universities, pedagogical and psychological institutes should be asked for their advice on appropriate questions (opinions held by professors, the trends in present scientific research in the different disciplines and the results thereof, theories which may have been rejected, etc.).
5. The project should be outlined by a committee made up of both teachers and school administrators.
6. The projected programme should be tried out in experimental schools which are truly representative of the general or regional milieu (with continuous control and systematic recording of facts, criticism and suggestions).
7. A revision should be made and the completed programme submitted to the authorities.
8. The programme should be explained to the teaching profession, showing the exact modifications involved and the spirit in which the new programme should be applied.
9. Families and the general public, as well as educational bodies, should be systematically informed.
10. Textbooks, methodological instructions, commentaries, etc., which conform to the new programmes should be produced.
11. An organization should be established to record all information and observations on the programme which would facilitate periodic evaluation and necessary modifications.

V. Suggestions and recommendations

Some of the most important suggestions and recommendations were as follows:

The mission of the school is to give the student the ability to understand the world he lives in and to provide the moral and intellectual means of doing so. It should teach the child to learn, behave, and orient himself so that he may be capable of completing his own knowledge, obeying the calls of duty and conscience, and choosing with intelligence his future career, bearing in mind his own capabilities.

The school should be a place where the child may lead a normal life so that later on he will be able to cope with the complexities of life and employ his leisure time profitably.

The relationship between the teacher and the pupil is the fundamental element of school life. If this relationship is not a good one any attempt to improve programmes and methods will be wasted effort.

If education is to be an effective factor in

intellectual and moral, economic and social progress, programmes and methods should fulfil the hopes and needs of society and at the same time be commensurate with the capabilities of the students to understand and assimilate facts at the various stages of their development. The training which the child receives during his primary schooling should be such that it uses all the resources of his personality at each stage of his development.

The division of pupils into groups should no longer be based on age but on levels of growth and maturity. The principle of sampling ideas should replace the encyclopaedic character of school programmes. This would permit more thorough study of certain subjects, the accent being on intellectual development rather than on the quantity of knowledge superficially learned.

The value of methods based on child psychology does not depend solely on lightening the structure of the programme but on many factors such as the educational worth of the teacher, the nature of control (inspection and examinations), the size of classes and the quality of school equipment.

Freedom given to teachers in interpreting the programme and in organizing their work is a constant stimulus, as it is also a direct appeal to their responsibility and professional competence.

The teaching of reading should be designed to take account of psychological reality. It should be spread over a longer period of time, and the examinations or tests should be postponed to a later date. The first teaching should be done globally, bearing in mind the centres of interest and concentration of the child. In order to develop different ways of understanding and expression guiding principles should be laid down according to the stage of development of the pupil, as to what part of the programme should be given a global treatment rather than analytical division into different disciplines.

The institution of a higher school leaving age should make it possible for school programmes to place at their proper age-level subjects which, in the past, had to be introduced prematurely. It should also enable the final year programme to deal more adequately with the needs of adolescents preparing to enter the adult world. In countries where the school leaving age is past puberty, subjects should be incorporated into the curricula which will prepare the students for parenthood, e.g. home economics, child care, first aid, and sexual morality. Care should be taken to facilitate the progress of children from primary to secondary education, so that the child coming from a milieu which is unable to understand or help him may not be unduly handicapped.

New textbooks should be tried out in classes of different milieus and with different types of teachers before they are finally published. The use of textbooks should be replaced more and more by documentation so as to help pupils to make full use of resources offered by libraries and to develop their taste for reading.

International exchange of the results of pedagogical research into school programmes and school life should be intensified, and a direct liaison should be established between the administrative authorities responsible for education, the teaching bodies, universities, and the institutes and laboratories of experimental teaching and educational psychology in different countries.

Experimental schools may, under proper control and conditions, try out new programmes and methods. These schools would thus serve as educational research laboratories.

3. Lourenço Filho, M. B. Primary school curricula in Latin America. Paris, Unesco, 1957. 36 p. (Educational studies and documents, no. 24, 1957).

I. Purpose and scope of the survey

This survey of the primary school curricula of twenty Latin American countries (Argentina, Brazil, Bolivia, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela) was undertaken with two main purposes in view: (a) to ascertain their similarities and dissimilarities, and (b) to evaluate the extent to which they meet the social and economic requirements of the countries concerned, assuming of course that the other factors of educational organization in the countries concerned allow them to be fully carried out. This study was prepared for the 1956 Regional Conference on Free and Compulsory Education in Latin America, organized by Unesco in co-operation with the Organization of American States.

II. Sources and methods used

This survey consists of two parts, corresponding to the two purposes mentioned above; most of the documents consulted applied to both parts, but some only to the second. The present curricula of the various countries were common to both. Twenty-one similar publications have also been consulted. The first set of documents consulted was published between 1942 and 1955, and the second between 1946 and 1956.

The aspects of the various curricula compared were: responsible authorities, bodies entrusted with the preparation, general outlines, composition and technical approach, and factors influencing the preparation.

In order to evaluate the extent to which the various curricula were meeting the social and economic requirements of each country, two criteria were adopted.

First, general awareness of the requirements was considered, on the basis of actual laws or

of general statements in the introductory sections of the documents, supported by statements of authorities in a position to define the educational policy in each country. A comparison of these with the general outlines of the curricula and other features, should show whether the means adopted in practice are consistent with the desired aims.

Secondly, the survey seeks to describe some of the most important aspects of social and economic life in Latin America, in the light of statistical data drawn from the publications already mentioned and assembled in compliance with uniform standards. Perfectly objective conclusions, at least with regard to some of the aspects considered have always been difficult to reach.

III. Preparation, structure and composition of the curricula

1. Preparation and publication. Except in Brazil, where each State is allowed to organize its own system of education and to develop its own curriculum, primary school curricula are approved and promulgated by the national governments concerned - by presidential decree, resolution of the National Board of Education, or by order of the Minister of Education. As a rule the curriculum is published in a single volume, but in a few cases it is published in a series of separate booklets. The volumes and booklets vary in length from 26 to 830 pages, and in content, from the mere listing of subjects to detailed explanations of pupil activities, materials of instruction and methods of teaching.

2. The general outline. The curricula are invariably based on a "scheme of studies", which determines their content and organization or general outline. The duration of studies is almost uniform: six years (in 15 countries), or five years (in five countries). The teaching of the language of the country is considered essential in every case. Equally close attention is given in all countries to elementary mathematics. All, without exception, place considerable emphasis upon natural science, social studies, aesthetics, physical training, handicrafts, health education and civic and moral instruction.

3. Composition and technical treatment. Two forms of treatment are generally adopted: the linear form, in which fresh subjects are added in each grade, and the cyclic form, in which all, or nearly all, the subjects are represented in every grade. The curricula are drawn up with the intention of showing teachers the purpose of their work and its elements, and of advising them on how to perform it correctly. Generally speaking, educational aims may be classified in four groups: (a) command of techniques and attainment of skills; (b) improvement of behaviour; (c) development of personality; and (d) acquisition of fuller moral, aesthetic and religious (spiritual) values. The material for each subject is generally divided into "knowledge" and "activities". The following table shows the gradation of material in the social studies (there is also a similar table for natural science) in the first two grades in seven countries:

	Argentina		Bolivia		Chile		Costa Rica		El Salvador		Mexico		Uruguay	
	Jr.	Sr.	I	II	I	II	I	II	I	II	I	II	I	II
1. Geography														
(a) Day and night	x										x			
(b) Transport and communications	x					x			x				x	
(c) Orientation	x			x										
(d) Seasons of the year		x		x		x			x			x		x
(e) The school, the way to school		x		x		x	x		x			x		
(f) Sun, moon and stars											x			
2. History														
(a) Local history					x		x					x		
(b) Local life and customs	x							x					x	
(c) Feast Days	x				x			x	x		x		x	
(d) Great characters in history	x							x		x		x	x	
(e) National emblems	x				x		x		x		x		x	
3. Moral and Civic Training														
(a) Good manners		x	x		x					x	x		x	
(b) Interest in the locality		x	x			x	x			x				
(c) Local government							x			x		x	x	
(d) Habits of co-operation		x		x	x		x		x		x		x	

4. Factors of technical treatment. In spite of the variations already described in matters of preparation and treatment, school curricula in Latin American countries reveal a greater number of similarities or points of contact than differences. The reasons are obvious enough: the origins are the same; and there have been many occasions for the discussion of ideas and practical experience among educators - at conferences and seminars, and through publications, fellowships, exchanges of teachers, etc.

IV. The curricula, and social and economic requirements

The object of this section is to assess the extent to which the school curricula meet the social and economic requirements of the countries concerned. Two criteria of evaluation were used, namely: (a) awareness of social and economic problems as evidenced in the documents and in the statements made by the educational authorities, and (b) objective examination of some aspects of the social and economic development of Latin America by specialized organs qualified to make it, with a view to determining the relation between revealed needs and the planning of the school curricula.

1. Awareness of the social influence of the schools. All the documents generally show keen awareness of the social influence of the schools. In the majority of countries, a transition is to be noted from the idea of child-centred education and emphasis on his development, to greater emphasis on the problems of community life. In many cases, the curricula include preliminary statements or extracts from official documents, mentioning social and economic problems and the part that can be played by schools in helping to solve such problems.

2. The actual impact of the schools upon society. With regard to this problem, the evidence seems to show that, while some parts of the cities and urban communities have made significant social, cultural and economic progress, the same cannot be claimed for the rural areas in which the great majority of the people in Latin America live. To what extent differences in the provision of school facilities(in which respect the cities are clearly favoured) are responsible for the rural communities being far behind in standards of living and cultural attainment, it is difficult to say, but there is no doubt that there are large discrepancies in this respect. At all events, there is a general and urgent need for improved living conditions in both cities and villages. Poor health and inferior diet result in low productivity. The cultivator works with primitive equipment, using outmoded techniques, and often under conditions of insecure tenure. The low level of education limits the supply of skilled workers for industrial expansion. Lack of transport facilities hinders the establishment of educational and health services, increases the cost of consumer goods, makes further inroads on the low returns of the small producers, etc.

V. Significance of the study

This study gives added significance to similar studies of other countries and regions. It shows that in their general arrangement, choice of material and technical treatment, the primary school curricula analysed have more points of similarity than of difference. Generally speaking, the aims, material and didactic methods are sound and correspond to the social and economic requirements of the countries for which they are intended. Each curriculum is distinctively marked by the cultural movement of the nation concerned.

In theory, therefore, the school curricula are fairly satisfactory. The application of the curricula, however, is a different matter, but one with which this study is not concerned. The next step, therefore, would seem to be to study actual conditions in the schools, to observe the teachers at work, in order to determine the extent to which the school objectives and the objectives of education in general are being implemented in practice, to ascertain the gaps existing between expectation and reality, and to devise means of bridging these gaps. Until and unless this is done, educational surveys however effective will fall very far short of improving the education of children and of ameliorating the social and economic conditions of the people generally.

4. Strømnes, Martin. Norske og nordiske laereplanar. Oslo, H. Aschehoug and Co., 1955. 112 p.

I. Background and purpose

Many school reforms have taken place in the Scandinavian countries during the last 20 years and more are proposed for the near future, e. g. the Danish law on primary schools (1937), the Norwegian school law (1936) and primary school curriculum (1939), the Swedish school reform (1950) and primary school curriculum (1953), and in Finland the school law (1948) and curriculum proposals for primary schools (1952). In all countries a special period of time has been allotted for the reforms; experimental activities in schools have been under way in Denmark since 1950, in Norway since 1954 and in Sweden since 1949.

In view of these reforms and the experiments going on, the author undertook the present comparison between curricula in Finland, Norway and Sweden. In order to limit the study and because the Danish curriculum dates from as long ago as 1942, Denmark was not included, but it is pointed out that this curriculum is based on the same guiding principles as those of the three countries included.

Before starting the comparative study, the author notes certain general trends and principles in the construction of present-day curricula and at the same time touches upon the problem of revising curricula and discusses different methods of revision. Up to the present time official curricula for primary schools have followed the pattern of those for secondary and higher schools, the reason being that compulsory primary schools were relatively new whereas other schools had existed for many hundred years. The primary school then inherited the methods by which curricula were constructed according to academic traditions, the emphasis being placed on the three R's. Other subjects had only a limited importance and the aims of the schools were principally intellectual and their purposes to impart knowledge and train the memory. During the last century with its developments in educational thought, new methods of learning and teaching, changes in social conditions, etc., schools have gradually changed too, the requirements of a modern society have introduced many new subjects and the curriculum has now become a matter for educational research. In the latest Finnish curriculum it is emphasized that a curriculum needs to be continuously revised and its purposes fully developed.

The procedures adopted in curriculum reform in the Scandinavian countries have usually been of four kinds: (1) a committee was appointed by educational authorities to bring about a reform; this committee had the advice and help of experts; (2) experimental practices were instituted within a school system under the guidance of research workers, and a reform based on results obtained and supported by appropriate documentation was proposed; (3) research centres or groups experimenting in schools proposed new elements and programmes based on their findings; (4) a combination of the three previous methods was used.

II. Procedure of the comparative study

The author starts by giving the background and history of the three curricula he is comparing. The latest Norwegian curriculum represents the joint work of experts and of the research centres where many hundred teachers and pupils took part in the experimental activities designed for this purpose. The Swedish and Finnish curricula were developed in a similar way but preparatory work was even more thorough in these cases. The Swedish curriculum followed the school reform of 1950 and was based upon many of the principles set forth at that time and upon experimental activities which had been carried out in the schools since 1949. The Finnish curriculum was presented in 1952 and was based upon research and experimental activities, especially with regard to time allotted to each subject, disposition of subject matters, methods of learning, etc. In all three countries experimental activities began a long time before the present curricula were adopted and they are still being continued so as to facilitate curriculum revision as the need arises.

III. Results: the purpose and content of three Scandinavian curricula

The Finnish, Swedish and Norwegian curricula are, on the whole, presented in the same way, i. e., with one general (pedagogic) section and one particular (subject matter) section. For comparative purposes, the general section is the more interesting, as it is here that the aims and content of primary education are set out; from these it is possible to discover the particular views and values that are most stressed in the curriculum of each country.

The author has chosen to deal with three questions taken from the general, introductory part of each curriculum: (a) aims of the primary school; (b) theories and ideas behind the construction of the curriculum; (c) problems of methods.

In the Finnish curriculum the aims of the primary school are dealt with at greater length than in the other two and many new views upon the curriculum are introduced. The Finnish curriculum is therefore taken as basis for the comparison, since it is the first curriculum in a Scandinavian country to present a complete statement of the aims, purposes and scope of a primary school. Among these, the Finnish curriculum particularly stressed the basis for the educational work in the class, the importance of arousing interest in intellectual improvement and the necessity of learning human relations in school to give the pupils the social education they need to be good citizens; all these matters are touched upon in the Swedish and Norwegian curricula although not discussed at such length or emphasized as much.

The Finnish plan stresses three principles in the construction of the curriculum, namely, consideration of the subject matter with regard to its general cultural value, the purpose of including each subject, and regard for the development and progress of the pupils. There are many similarities in the three curricula as regards the content and most of the subject matter has its traditional place in any curriculum. But there are also subjects included because of local requirements, e. g. teaching about forestry and agriculture in Finland, and about fishery and shipping in Norway. A new subject in both the Finnish and Swedish curricula is home and family education. On the whole these two curricula stress the importance of social education; the author thinks that such subjects are missing in the Norwegian curriculum and that this is one of the reasons why it needs revision. In all three curricula the need for greater co-ordination of subjects and the importance of the relationship of subject matter when a curriculum is constructed are stressed.

The chapter on methods receives less attention

in the comparison than the questions of aims and ideas behind the content of the curriculum. The three curricula show great similarities with regard to methods and to recommendations concerning them. Teachers have considerable freedom in the choice of methods in all three countries. The Finnish emphasize that improvement in teaching methods can only be achieved when teachers have this freedom.

After having compared these three curricula, the author discusses a curriculum used for demonstration purposes at a teacher training college, principally based upon the views of the Finnish curriculum and its statement of the aims of the primary school (see above). Experiments begun in 1931 have led to this curriculum and an attempt is made to co-ordinate all subject matter and to include and give a predominant place to social education. A local school curriculum in use in Trondheim primary schools is presented at the same time to show how the curriculum may be adapted to local conditions. It was in this local school system that the experiments took place.

IV. Conclusions

After examining the curricula of the three countries, the curriculum of one local school system, and the curriculum used for demonstration purposes in a teacher training institution, the author draws the following conclusions.

In making this comparative study, he has only been concerned with what he refers to as "the central programming part of the curriculum", the reason being that he considers this part, which deals with purposes and content, to be the most important.

The Swedish and Finnish curricula show clearly that they are in a period of intensive development with regard to the rôle of the school in a modern society, and the way in which curricula may be adapted to suit modern conditions. Many new subjects are being introduced (especially in the Finnish curriculum) and new methods of teaching are applied which give more room for social and personal guidance as well as for the traditional requirements of knowledge. Minimum requirements in the different subjects are no longer mentioned and teachers have on the whole considerable freedom in presenting their subjects. In this connexion the author draws attention to the Swedish nine-year school, where long-range curriculum planning becomes easier and where it is possible to introduce new subjects and give social guidance.

On the other hand it seems to the author that what is missing in these curricula is a better disposition of the subjects according to modern educational methods, and flexibility within the curriculum, i. e. transfer of learning from one subject to another, adaptation of the curriculum to local conditions, etc. In the curriculum presented at the teacher training college, an attempt has been made to introduce some of the ideas which the author would like to find in a modern curriculum. In this connexion he recommends the adoption of local curricula where suitable. But he also strongly recommends that those who plan local curricula should be in constant touch with the central curriculum planning body. If not, a curriculum for a local school system may stay rigid and not be sufficiently open to new ideas and methods.

The Norwegian curriculum of 1939, he considers, should be revised in order to include modern ideas on methods and to leave room for new subjects such as social studies, human relations, civics, etc. As it now stands, the Norwegian curriculum is both progressive and traditional, the principles and ideas on which it is based being progressive, but the time-tables, methods of work, etc., are not adapted to suit the educational needs of a modern community. Revision of the curriculum should however, according to the author, be a continuing process and not merely entrusted to a specially appointed curriculum committee working within a fixed time-limit. A curriculum research centre should work on curriculum reform in close collaboration with committees dealing with experimental activities in schools. By pooling research and practical knowledge, such a centre could make for better co-ordination between curricula in different types of schools and for greater uniformity of curricula within the whole school system.

PART II

PSYCHO-PEDAGOGICAL STUDIES AND EXPERIMENTS

A. A study of fundamental importance to school reform

5. Elmgren, John. School and psychology; a report on the research work of the 1946 School Commission. Stockholm, Iduns tryckeriaktiebolag, 1952. 342 p.

I. Background and general purpose of the work

The Swedish School Reform Act, passed in May 1950, is said to be the most important event in the history of Swedish education since compulsory education for all children was introduced in 1842. Behind it lie more than ten years of preparatory work, carried out by teams of experts and officials, politicians, laymen, and teachers, the reports of which, published in books and monographs, cover more than 5,000 pages. In preparation for this reform, the experts studied a number of educational systems in Europe and the United States of America, and the reports published in connexion with reforms or proposed reforms in England, Scotland, France and New Zealand were studied and discussed in great detail. Furthermore, the results of research in psychology and education in other countries, particularly the Anglo-Saxon countries, were compared with the results of local studies so that the reforms contemplated could be seen in as large a perspective as possible.

This work is an excellent example of an effort to combine foreign and local experience in reforming various aspects of an education system. Its object is expressed in the following words which were addressed to all the teachers who helped carry out the testing programme:

"The investigations that are now to be carried out are of fundamental importance for the School Commission's research work in educational psychology, and aim primarily at determining the general intellectual standard at different age-levels, with a view, among other things, to the correct adaptation of the curricula to the abilities of the children, the detection of different types of talent, and the achievement of a suitable differentiation of talent within the school."

II. Scope of the studies

The studies cover a very wide field of investigation, and are classified under the following five headings: theoretical and practical aptitude; the relationship between knowledge tests and intelligence tests; aptitude typology and qualitative differences in aptitude; linguistic maturity; and the problems of differentiation. Extensive use has been made not only of original research data, but also of the results of similar or related studies in other countries. For want of space, this summary includes only a few samples of the findings and describes only such portions of the report as seem most significant to the purposes of the present publication.

III. Distribution and administration of basic tests

Different testing methods were used in each of the five phases mentioned, the features of which will be indicated below in connexion with each phase. Data of fundamental importance for the entire work were obtained from the results of three types of intelligence tests which were administered to groups of pupils in practically the whole of the educational system of Gothenburg (the second largest city of Sweden), at age levels corresponding to Grades 3-8 of the primary school proper. In addition, supplementary tests were given in girls' schools, in the municipal middle school, and in boys' and girls' grammar schools. Such a comprehensive testing programme, involving thousands of pupils, called for the co-operation of classroom teachers in all the schools, and special training was given in the administration of the tests to ensure uniformity of procedure. In all, 38,732 tests were given to boys and girls. These tests had high reliability coefficients varying from .917 to .989. The degree of correlation between them was also high, varying from .653 to .855 and, incidentally, showing a tendency for correlation to increase with age and to be somewhat higher for the girls than for the boys.

IV. The investigation of practical and theoretical aptitude

The object of this part of the work was "to get a picture of the course of development of theoretical intelligence and of the aspects of practical aptitude than can be determined with the aid of testing techniques". To supplement the data from the basic tests, the Minnesota series were given to 312 children from 10-15 years of age (156 boys and 156 girls). They included a paper test, a special relations test, and an assembly test. These tests, modified to suit conditions in Sweden, had been in use for many years at the Institute of Educational Psychology at Gothenburg University.

Quantitative relations between theoretical and practical aptitudes at different age levels were computed. Development curves for practical aptitude according to the Swedish investigation were compared with the corresponding curves for American studies. The development in practical aptitude of boys and girls was likewise compared. A comparison was made of the groups from regular schools and those from schools for backward children with respect to theoretical and practical aptitude. On the whole, the conclusions drawn from these computations and comparisons may be summed up briefly as follows:

1. The results show clearly that "there is no state of opposition between theoretical and practical aptitude. This refutes the popular view that anybody who is no good at theoretical studies is usually suited to practical activity. It would rather appear to be the case ... that the relatively greatest versatility in aptitude characterizes the category of pupil best equipped with general intelligence. The pupils who are poorly endowed with general intelligence are not, by some kind of compensation, talented practically".

2. The results of the investigation tended to justify the nine-year compulsory schooling feature of the Swedish educational reform. "On the basis of the results, it could probably be maintained that compulsory education should be extended, at least for those with normally developed aptitude, right up to the age of 18, which of course has in fact been proposed in a number of countries."

3. The results seemed also to support the position taken in regard to the extension of the school-leaving age. "Of the main reasons for raising the school-leaving age, the Board especially wishes to emphasize youth welfare and vocational training. As things are now, a large number of children at the transitional age are released, all too early and unprepared, to earn their own living, and there, in unskilled work, run the risk, during the years when they are best able to profit by study, of being exploited instead of trained. In their dazed struggle at this age to become independent, many are tempted to go for the first job that can give them a good starting wage - often bigger than they can handle sensibly at this age - but which has little to give them in the way of training or work for the future."

4. As to the question of whether differentiation should or should not take place inside the school and if so at what stage, the results of the study do not give an adequate answer. Rather, they suggest further psychological follow-up studies should be made over a number of years before any definite conclusion can be reached on this matter.

V. Relation between knowledge tests and intelligence tests

This is an investigation of the relation between knowledge tests, intelligence tests, and school reports in the theoretical and practical subjects in the elementary school. In all, 1,642 children (791 boys and 851 girls) in Grades 5, 7 and 8 were tested. The results of the attainment tests were compared with the results of group intelligence tests and with school reports for the same children. With these data, moreover, were compared the results of the intelligence tests and of the Minnesota assembly test (mentioned in the previous section). Altogether, 25 different variables were compared by factor analysis. On the basis of the comparisons made, plus some information from the results of similar studies abroad, the following conclusions were drawn:

1. "The acquisition of knowledge in school is a function partly of general intelligence, and partly of volitional nature, working qualities, and adaptation to school environment." In certain subjects, e. g. mathematics, general intelligence is less important than volitional factors.

2. Character training should be the combined responsibility of the school, the home, and the community generally. Character training in school is only a continuation of earlier training at home and in society.

3. The great problem in modern education is to promote the building of interests to facilitate social adaptation by means of teaching that genuinely stimulates development.

4. As to the problem of discipline, the importance of positive measures must be emphasized, such as, for example, small classes, mental hygiene, consultation with school psychologists, psycho-therapeutic treatment for maladjusted pupils, etc.

VI. The factorial maturity investigation

To obtain a deeper insight into aptitude typology and the qualitative differences in aptitude, an investigation was made of a total of 403 elementary school boys and girls - 120 girls and 102 boys in the sixth class, and 101 girls and 80 boys in the eighth class. These children, who had earlier been tested, were subjected to an entirely new battery of comprehensive special tests including, in particular, tests of practical aptitude. Again, factor analysis was used. Factor profiles of the children were compared with teachers' estimates.

The results of this investigation suggest that teachers should supplement their estimates of pupils' attainments and character development with data obtained from more objective methods of measuring.

VII. The linguistic maturity investigation

With the collaboration of the Swedish Radio Service, a number of investigations were carried out in 1947 and 1948 to throw light on the possibilities of school broadcasting for language teaching at the elementary school stage. Altogether, 361 boys and 482 girls in the fourth and fifth classes and 160 boys and 250 girls in the sixth and seventh

classes were involved. "The purpose of the ... investigations which were undertaken .. was to attempt to illuminate those aspects of the psychology of the linguistic functions that could be expected to be of importance for elementary language teaching by this method, especially the teaching of the first foreign language in the elementary school, namely English."

The intention was to discover, among other things, the earliest age at which language teaching of this type can be started, attention being paid to the children's level of intellectual development in relation to their age. The question was as follows: "Can averagely gifted ten-year-olds in our present elementary schools profit by language teaching, if this is properly carried out, or must the teaching of the first foreign language be postponed until eleven or twelve?"

In addition to some earlier tests, a number of specially constructed linguistic tests, containing a large number of varied linguistic tasks, were used. A number of tests were also given through broadcasts.

Again, factor analysis was used. The results, together with information from similar studies abroad, led to the following conclusions:

1. For boys, general intelligence has greater importance for success in language than for girls. Moreover, for boys general intelligence appears to be of greater importance at the lower than at the higher age level.

2. Among the girls, the linguistic aptitude structure is obviously not so decidedly linked to the level of general intelligence as among the boys. The practical conclusion that may be drawn from this fact is that "girls can to a greater extent be taught from the beginning by methods which appeal to specifically linguistic aptitude" than boys.

3. Linguistic aptitude is formed earlier among the girls than among the boys, as shown by the fact that the younger girls in classes 4-5 achieved a better average than the older boys in classes 6-7. This suggests that foreign language teaching should start earlier with girls than with boys.

4. At least an elementary awareness of rules of grammar seems to be indispensable for successful language learning. "It is of course educationally desirable that the knowledge of grammatical rules which appears indispensable should be imparted in concrete contexts and by methods that arouse the greatest possible interest."

5. These findings have been utilized in the revision of the English course. According to the proposals of the School Commission, English is to be introduced as early as the fifth class of the comprehensive school. Further experimentation is needed on this, as the author points out in the following words:

"Thus the discussion of language education and linguistic psychology in our country is in a stage of rapid development. To judge from all the evidence, there is a need in this sphere for systematic research and experiments, to give the discussion a concrete basis of empirical facts. Traditional teaching methods and more modern ones should thus be studied over a longish period as part of the educational research programme, and should be combined with thorough psychological and educational tests of the results of teaching. Control and research groups must be selected with the greatest care, as must teachers who are to take charge of language teaching methods."

VIII. The problem of differentiation

The basis for this discussion consists of conclusions drawn from various sources - psychological studies and the like, and the results of the various tests given to the children. A questionnaire on the problem of backwardness in reading, consisting of 17 items, each with sub-items, was sent to teachers in the Gothenburg elementary schools, in order to obtain detailed factual information on the subject. Arithmetic, spelling, etc. were also subjected to similar analysis and discussion. The question of psychological aptitude testing is then examined.

On the basis of a rather lengthy discussion on the results of psychological studies in Sweden and abroad, a number of conclusions have been drawn which, in the main, tend to justify the scheme of differentiation and organization of classes that was recommended by the school reform proposal. For example, the entrance age of seven, which is now in force and has been for a long time, found support in the results of psychological studies. While it is admitted that many children who are seven years old chronologically may have mental ages as low as five, or as high as nine or ten, and that children under seven may be more advanced mentally than their chronological seniors, generally speaking, the seven-year-old child is better prepared to start his schooling than the six-year-old child. Therefore, great care must be exercised in the testing of so-called "maturity for school", and only in exceptional cases, and after thorough psychological and medical examination, should children under seven be permitted to begin school.

IX. Overall significance of the work with reference to the curriculum

1. This work combines the results of original Swedish studies and the conclusions from similar studies in other countries, due account being taken of individual limitations and of the danger of making comparisons where the conditions are not comparable. Its general aim is to determine intellectual standards at different levels so that the curriculum can be adapted to suit the ages, abilities, aptitudes and needs of children.

2. While other considerations entered into the

making of decisions, on the whole the authorities took into account the results of this work. In the first and most important section of the Act, the following statements appear, which reflect the findings of the 1946 School Commission:(1)

"Measures shall be taken to introduce, within a period to be later determined, a nine-year compulsory comprehensive school, designed - in so far as the projected experiments demonstrate its expediency - to replace the elementary school, the continuation school, the people's secondary school, the municipal intermediate school, and the middle school.

All-round experiments shall be carried out concerning suitable forms of work for the comprehensive school, as for instance concerning differentiation of the pupils and the curriculum into streams in view of differences of bent among the pupils, concerning the work inside the school, and concerning the acceptance of pupils into the comprehensive school on the basis of a school-maturity examination. Experiments shall also be conducted with different forms of practical middle schools."

3. The work under review was written after the framework of the school reform had been established. It took the form of "comments" on the various provisions of the reform bill. Therefore, it cannot be considered as having influenced the original bill. However, as we have already noted, the effect of these comments upon both the revision of the bill and the implementation of the act afterwards, was considerable to say the least.

4. In many countries today, educational reform is a topic of current interest. Next September (1958) a seminar on school reform, sponsored by Unesco, will be held in India for the countries of South and East Asia. This work should be of interest to the seminar. Its full value, however, can only be appreciated after a reading of the complete report, either in the original Swedish or in the English translation, limited numbers of which may be obtained by writing to the author.

(1) Düring, Ingemar, ed. The Swedish school-reform, 1950. Uppsala, 1951. 171 p. p. 32.

B. Studies in specific subjects: Arithmetic, modern languages, spelling, writing, composition, character training and moral education

ARITHMETIC

6. Moraes, Anna Maria M. de. Recherche psychopédagogique sur la solution des problèmes d'arithmétique. Louvain, E. Nauwelaerts; Paris, J. Vrin, 1954. 139 p. (Etudes et recherches de pédagogie expérimentale).

I. Aim of the research

The object of this book is to analyse the process whereby a pupil discovers, or fails to discover, how he should proceed when trying to solve a problem; arithmetic is considered by the author from two quite different angles, that of mere calculation and that of real mathematics. Calculation is simply an automatic process, which should make it possible to obtain a rapid and accurate reaction, whereas mathematics require reasoning, understanding of the arithmetical operations themselves and the capacity to apply these operations in the solution of concrete and varied problems. The writer has analysed various psycho-pedagogical research projects on the problem of arithmetic and has reached the conclusion that the best method appears to be that which leaves the pupil free to choose his own technique and develop his own reasoning - with the teacher's assistance - instead of following passively, if not mechanically, certain steps indicated by the teacher. Almost all research on the mental processes of a child grappling with a problem is concerned with the analysis of written work. The writer proposes to try out a method which will enable the psycho-pedagogist and even - to some extent - the teacher to understand the mental processes of pupils when they are seeking to solve arithmetical problems. It is only when their different thought processes are known that it will be possible to adapt teaching to their mental faculties.

II. Method of research

Wishing to try out a method of studying the mental processes of pupils struggling with arithmetical problems, the writer opted for that of "thinking aloud", i. e. the pupil is given a problem and is asked to express aloud all that passes through his mind while he is trying to find a solution. At first, the writer met with certain difficulties. The first research conducted in the field of elementary arithmetic related to the most common mistakes made by pupils in carrying out the four operations. As far as the basic operations are concerned, the processes of calculation can be noted fairly easily by means of the usual methods; but, in the case of reasoning as complicated as that required for the solution of arithmetical problems, the variety of methods used by the pupil in order to express his thoughts is such that it is essential to have a complete record of all his words as well as of his silences.

The writer employed a magnetophone to record all the tests and was thus able to re-examine at

leisure the pupil's spoken thoughts, his remarks, hesitations and silences, and to note their exact duration, as well as the different shades of meaning which the pupil gave to his thoughts through the intonation of his voice.

Two pupils were chosen in each class - one among the best and the other among the weakest - to undergo an individual test. The problems, typed on index-cards, were submitted one by one to the pupil, who was asked to express aloud "everything that passed through his mind while he was trying to find a solution". In general, the instructions were clearly understood and the pupils did not seem to have any difficulty in following them.

In order to perfect this method of studying the reasoning of a child struggling with arithmetical problems, the writer deemed it necessary to select subjects of fairly different ages. That is why children of eight to fourteen years of age, belonging to nine different schools, were tested. All the tests were organized under ordinary school conditions; the written tests took place during lessons, with the teacher present. The collective examinations consisted of two parts: a written paper containing problems, and a collective oral intelligence test. The written paper, designed to find out which pupils were the best or the worst at solving problems, contained a different set of problems for each of the three primary levels. Wishing to keep, as far as possible, to the sort of problems which the children usually had to tackle at school, the writer selected them from different school textbooks and from a list of problems prepared by different teachers with a view to ascertaining whether pupils should be moved up from one class to another at the 2nd and 3rd primary levels. After several trials, ten problems were chosen for each of the series. These problems were so arranged that the first five gradually became more difficult, while the last five became progressively easier, so that the child could make a good start and would not have to deal with the most difficult problems, when tired, at the end of the test. These problems were hectographed in such a way that the pupil could write the answer to each and show how he had worked it out in a blank space on the right; the use of separate sheets as rough copies was forbidden.

As the writer had been unable to obtain any data on the pupils' mental level, she was obliged to give them an intelligence test.

Problems for the individual tests were chosen in the same way as those for the written test. Each series consisted of six problems. For 3rd and 4th year pupils, problems involving the four basic operations and consisting of two or three successive steps were selected. Three of them presented a further difficulty: the second contained a superfluous factor; the fifth presupposed a knowledge of the concept of perimeter, and the last - the most difficult according to the results obtained - required an understanding of the notions of profit, loss and debt.

III. Analysis of the solutions

In general, it seems that 3rd and 4th year pupils did not understand the basic arithmetical operations - particularly multiplication and division - well enough to be able to apply them to concrete problems. As they had not yet reached the stage when calculation becomes a mechanical process, their minds were not free enough to enable them to concentrate on trying to discover the right method of solving the problems. The questions set, with the exception of the last, were not beyond the mental capacity of children of eight to ten years. Apart from mistakes in reckoning, each of the five problems was correctly solved by at least six pupils, although only two gave the right answers to all five of them.

The answers to the six problems supplied by 5th and 6th year pupils pointed to certain conclusions. Although each problem was accurately solved by at least five pupils, no pupil succeeded in solving all six of them. It is the most intellectually gifted pupils who succeed in finding the largest number of correct solutions, whereas it is often impossible to find any trace of reasoning among the least able. The four pupils who supplied five correct answers were those who had done best in the intelligence test. This confirms the fact that intelligence is one of the main factors in the correct solution of problems. An analysis of the different ways in which each problem was worked out supplies further proof of this; it is only when the child understands the logical relations between the various data that he is able to reason. The writer also noted that certain "model solutions" are of no use to pupils; the least gifted do not know how to use them, the most able never use them and the others are liable to make mistakes in trying to recognize the model problem in the problem set. This becomes clear, for instance, in studying the applications of the rule of three and unequal division.

Certain conclusions can be drawn from the solutions supplied by pupils of the 4th primary level and by 5th and 6th year pupils in the "Humanities" division (Belgium).

No answers are set down at random, as among the younger pupils. Revealing a more developed critical sense, these pupils are aware of the value of their work and of the fruitlessness of their efforts, but none of them admits himself defeated immediately after reading a problem. Further, the variety of the solutions supplied, even by pupils of the same school, shows that these children reason independently and, in general, no longer make use of "model solutions". The remarks made earlier concerning the rôle of intelligence, when analysing the answers of pupils at the 3rd primary level, also apply here. Account must be taken, however, of the selection

already made, since it is a question of pupils at the "Humanities" level.

The method of "thinking aloud", as it was employed, has proved to be an excellent, if not the only, way of following, step by step, all the mental processes of pupils trying to solve arithmetical problems. A very careful analysis of the 20 to 30 answers to each problem has made it possible to ascertain not only all the correct methods of reasoning that are possible, but also the main sources of difficulty for most pupils. Whereas, in general, adults experience some difficulty in formulating their reasoning aloud, this is seldom observed in schoolchildren of any age, and their spoken thoughts reflect their mental processes to a greater or lesser degree.

The correlations established between the results of the written paper containing problems and those of the intelligence test, and the correspondence between the intellectual level and the answers given orally by the pupils who were tested individually, seem to show that intelligence is one of the main factors in the correct solution of arithmetical problems. It comes into play mainly in the pupil's understanding of the terms of a problem and in the mathematical reasoning necessary for its solution. It is important to note that the correct solution of a problem depends largely on the pupil's complete understanding of the problem and this in turn depends on a careful and intelligent reading of the terms of the problem, particularly when the latter is of a complicated nature. When the reasoning of girls and boys is compared, it is observed that the latter have greater aptitude in that they arrive at a correct solution more quickly than girls. As, in general, 3rd and 4th year primary pupils have not properly mastered the basic operations, particularly multiplication and division, they experience real difficulty in using these operations to solve concrete problems. Further, they are so absorbed by the process of calculation, which has not yet become automatic with them, that their minds are not free enough to enable them to concentrate on trying to discover the correct method of solving a problem.

An analysis of problems involving the rule of three and unequal division shows that knowledge of a technique alone does not enable the child to solve all problems; he must understand the logical relations between the various data, otherwise he is liable to become completely confused or to arrive at absurd answers.

Diagrams can play an important part in solving certain problems, particularly those relating to area or volume; but this method is not suitable for all pupils. Some need a concrete basis for their reasoning, whereas others are able to work out a problem by abstract reasoning alone. This seems to depend on the individual characteristics of each pupil: those employing either method may equally well succeed or fail; in any case, that is what seems to emerge from an analysis of the results of this "thinking aloud" method.

ARITHMETIC

7. Thyne, James M. Patterns of error in the addition of number facts. London, University of London Press, 1954. 275 p.

I. Background and aim of the study

Generally speaking, studies on errors in arithmetic computation are concerned mainly with finding the relative difficulty of the various combinations on the basis of the "order of frequency of errors". They do not go far enough to determine the nature and causes of the errors made. As two writers[1] pointed out many years ago, "Much of our treatment of error, be it ever so heroic, is nevertheless superficial and unsuccessful because it is based on too little understanding of the psychological nature of the processes leading up to it".

Despite the suggestions of these and other critics of the relative sterility of error analysis, the psychological nature of error in the fundamental arithmetic processes has remained more or less unexplored. It is the purpose of this investigation to discover the nature and causes of errors made by pupils with respect to addition facts, such as $x + y = z$, (where x, y and z represent numbers and where neither x nor y is greater than 9 e. g. , $2 + 4 = 6$). Instead of asking what the errors are, this study attempts to answer the general question: "How do errors occur?" or, more precisely, "What are the different kinds of errors committed by different pupils on different occasions?".

II. Sources and procedure

The data for this study were obtained by testing 1,427 children (714 boys and 713 girls) from infant classes (classes for five to seven year-old children) in different areas of Scotland (two cities and six counties). These pupils were tested three different times at intervals of six months. As it was essential that each pupil should perform every operation, no time limit was imposed. Of the 1,427 test papers collected, 1,315 were used, 665 by boys and 650 by girls.

One hundred addition facts were selected for this study, which were arranged in ten rows of ten each, the first row of which is as follows:

3	5	7	2	3	0	6	3	1	4
+1	+3	+7	+7	+4	+7	+7	+5	+6	+2

The effects of adaptation and fatigue were either eliminated or compensated for, and copying was prevented. As addition may be performed either upwards or downwards, and as the combinations were arranged for upward addition, only schools teaching upward addition were used. So that the task might not appear too formidable, five rows were printed on one side of the sheet and five on the other.

(1) Knight, F. B. , and Ford, E. "Temporary lapses in ability and errors in arithmetic". The Elementary School Journal (Chicago), vol. XXXII, 1932, p. 1124.

III. Limitations of the procedure

The investigator recognized two possible limitations of his procedure. First, it may be argued that this study does not fulfil two conditions which are generally regarded as indispensable, namely: (a) that it should begin with a precise hypothesis which can be tested, and (b) that the investigation should be designed specifically to test this hypothesis. Second, there may be some question with respect to the adequacy and "representativeness" of the sample, as there is some doubt as to whether the sample may be regarded as a truly "random" sample of Scottish infant population, even though it may represent a cross-section of such population.

In answer to these questions, the investigator points out: first, that the study was not to test a hypothesis, but rather to discover one from an examination of the errors themselves; second, that because of this purpose of the study, there are grounds for believing that random sampling from a total population was not necessary. It was possible that there might be fewer errors for the sample used than there would be in a truly random sample, or that there might be fewer errors of one type and more of some other type than would be found in a truly random sample. However, these differences might not affect to any marked extent the conditions (which are psychological mostly) under which errors of any type occur. "By analogy, there may be fewer cases of influenza in one school than in another, but the causes of influenza may be very much the same in both schools."

IV. Results of the investigation

1. One of the most certain findings of the inquiry has been that error is not a single thing. There are different kinds of error, made by different pupils on different occasions. The fact is that at least 12 types of errors were discovered, which are:

S-type: Subtraction error, the wrong answer being the difference between the given numbers.
For example, 7 +4 = 3

P-type: 'P' symbolizes the word 'persistence', but 'P-type' answer means only that the figure appearing in the answer-space is the same as one of the given figures.
For example, 7 +4 = 7

Pu- and Pl-types: Distinctions within the P-type, Pu and Pl indicating whether the answer-figure was the same as the upper, or lower, of the given figures.
For example, 7 +4 = 7 is of the Pu-type
and 7 +4 = 4 the Pl-type

Inverse subtraction: A type of answer such that the answer actually given is the difference between the larger number and the smaller increased by ten.
For example, 3 +6 = 7 ('six from thirteen')

S + 10: The answer is the difference increased by ten.
For example, 4 +1 = 13

Inverse subtraction + 10: For example, 3 +9 = 14

± x - Type (x = 1 or 2): Type of answer in which the answer is either one or two too small, or one or two too large.
For example, 3 +8 = 12 and 8 +7 = 13

Reversal: Type in which the answer is such that, were its figures interchanged, the answer would be correct.
For example, 7 +6 = 31

Confusion: Type in which the answer would be correct were one of the given figures read as being a different figure, but one visually similar to it - such as 9 read as 6.
For example, 9 +7 = 13

Multiplication: The answer is the product of the given numbers.
For example, 7 +4 = 28

Unit of sum: The one figure given as answer is the units figure of the correct answer.
For example, 8 +8 = 6

Sum plus ten: Answer is ten more than the correct answer.
For example, 3 +4 = 17

2. A second important finding of the inquiry is that while there were many different kinds of error, a great many of them can be classified in a relatively small number of groups. Nearly three-quarters of the errors made by the 1,315 pupils in the first test fell within the following types:

± x-type: includes the largest number of errors, 2,607, or 48 per cent of all the errors

S-type:	includes 736, or 14 per cent of the errors
Confusion-type:	includes 398 or 7 per cent of all the errors
Reversals:	includes 235 or 4 per cent of the total.

3. There are many errors which may be called "slips". These were not due to anything else but the failure of the memory or association machine to function. The pupil's understanding of the question was not in doubt. He knew the answer. But somehow there had been a "slip" in the process.

V. Implications for curriculum and method

1. Emphasis must be placed first of all upon the meaning of the numbers and of the combinations. Drill in addition of numbers should follow such understanding if errors are to be minimized.

2. Teachers must be taught to diagnose difficulties of pupils. A real diagnosis, if it is to be helpful, must do more than consider mere total scores. "Real diagnoses must take into consideration the types of problems missed, and, if possible, ascertain the psychological processes underlying the errors." (p. 12)

3. It should be obvious that the teacher should pay very close attention to the types of errors which are more persistent and common than those which occur less frequently.

4. In all cases, including errors due to "slips", teachers should try to understand why pupils make the mistakes that they do and try to correct them or prevent their occurrence through appropriate remedial measures, realizing always that error is not a single thing, and that there are different kinds of errors, made by different pupils or by the same pupils on different occasions.

5. Following are specific suggestions for dealing with a number of the types of errors listed in IV above.

$\pm x\,(x = 1, 2)$-type. As noted above, this type of error is one of the most serious and persistent. The frequency of errors of this kind tends to decrease with practice, not because "lack of practice" causes them, but because practice in the statement of the facts provides a more accurate method of automatic recall. It follows, therefore, that the more "meaningful" the method is the better the results will be. The consistent use of problem-situations, which lead the pupil to make an oral summary of his work by relating the problem-situation with the result, is therefore recommended.

Inverse subtraction-type: This type of error may not be related at all to the amount of practice, nor to the lack of understanding of the meaning of addition. The problem appears to be one of mental "set". The remedial measure "would appear to necessitate the devising of conditions which would serve to make a more clear distinction between addition and subtraction situations". This might be done by devising separate visual layouts for addition and subtraction, and by having consistently used verbal formulae.

Confusion-type. The most obvious preventive measure for this type of error would seem to be the use of figures which are as distinct as can be from other figures. Each should be unique. All errors of this kind must be recognized by the teacher as not errors in arithmetic at all, and that the pupil should not be reprimanded for making them or set to work all over again, for an answer which, as he saw it, was in fact perfectly correct.

Reversal-type. Reversals, like confusions, are not arithmetical errors, except by accident. It so happens that 21 is not only 12 in reverse, but a numerical symbol on its own account. Unless this type of error is persistent, there would seem to be no pressing need for any immediate action, apart from straightforward correction by the teacher.

VI. Implications for further research

1. More accurate information should be made available as to what actually happens in schools at present with respect to the "meaningful", as opposed to "rote", aspects of number work. What meanings are the number-names intended to have? What is the infant pupil expected to understand by the word "five"? What is he to think of? Is there agreement among teachers as to what a number really is? On the "rote" side of the problem, how do they find the difference between two numbers? When pupils do "formal" exercises in school, do they relate these to practical situations outside the school, or do they think of them merely as "school exercises" to be forgotten when the bell rings?

2. It would be profitable to know the relation, if any, between the different types of error and intelligence level, or, more exactly, mental age.

3. One would like to know also to what extent discrimination can be increased by practice, and to what extent it is a function of maturation.

4. Which types of error persist (and for how long) with the passage of time? It has been discovered in this study that confusion-type errors tend to disappear with age. What about the other types of error?

5. Do "good" pupils make the same kinds of error as do "poor" pupils?

6. There is a need for studies leading to a better understanding of how children think about numbers.

MODERN LANGUAGES (FRISIAN)

8. Post, P. Over de woordenschat van zesjarige kinderen in tweetalig Friesland. Groningen, J. B. Wolters, 1951. 78 p. (Mededelingen van het Nutsseminarium voor Paedagogiek

aan de Universiteit van Amsterdam, no. 49). In Dutch with an English summary.

I. Background

The author, one-time senior educational officer at the then Netherlands-Indies Ministry of Education, Arts and Sciences at Batavia (Djakarta), was Inspector of Education in the province of West Java, director of a training school for teachers and leader of various "proefscholen" (experimental schools), in all of which functions he dealt for many years with the problems and difficulties of education in territories with a bilingual or polyglot population.

In Friesland (North Netherlands) the author, a scientific assistant at the Pedagogical Seminary of Amsterdam University, found that the situation as regards language resembled in many respects that existing in Indonesia. The native tongue is Frisian, while Dutch is the official language and has to be learned by the children at school.

Until 1951 the language used in teaching the children in all Frisian schools had been Dutch. The pupils were taught the basic subjects in Dutch, and so learned this language, as it were, in passing. This situation was felt to be a serious drawback, especially after World War II. The knowledge and experience gained from educational methods applied in bilingual areas elsewhere led to a growing desire to use Frisian as a teaching medium, and to substitute Dutch for it as the vehicle only after a reasonably long period of schooling.

II. Procedures of the study

The Council of Frisian Teachers decided, with the approval of the Netherlands educational authorities, to invite the teaching staffs of a few selected schools to make a trial with Frisian as the teaching medium in the lower grades.

The staffs of the schools were prepared to make the experiment, which has since been completed with satisfactory results.

In view of the need to build up an adequate teaching system for the native tongue (Frisian) as well as for the "foreign" vehicle-language (Dutch) it was felt desirable to ascertain the extent of the Frisian six-year-olds' vocabulary, both in Frisian and in Dutch.

A list of words was accordingly drawn up, consisting of 79 nouns, 34 verbs and 12 adjectives, 125 words in all, relating to the children's domestic and village surroundings, family relations, rooms in the house, furniture, equipment, household utensils, heating, lighting, tools, animals, plants, sounds, sensorily perceptible properties, natural phenomena, socio-ethical concepts, food, clothing, hygiene, illness, nursing and care, play, work and other activities, treatment of animals, the street, the village, travel. The words were suggested to the children by showing them pictures, telling them a story, by drawings, objects and gestures. All the six-year-olds in the first standards of the 9 selected schools were tested with exactly the same material. Tests were made in the Frisian language, both for the native tongue and for Dutch.

III. Results of the study

Altogether 88 children were tested with 125 words, i. e. there were 11,000 reactions in each of the languages. The results were as follows:

The average number of Frisian words the children knew was 97 (77. 5%); the average number of Dutch words was 33 (26. 6%).

It appeared, therefore, that most Frisian children were already bilingual at the age of six, although the above percentages showed an extremely uneven balance as between the two languages.

A comparison was made between the children's performances in both languages, by

(a) children who had attended a kindergarten school with Dutch as vehicle;

(b) children who had attended a kindergarten school with Frisian as vehicle, and

(c) children who had not previously attended a kindergarten school.

The Frisian vocabulary of these three categories shows hardly any difference: the averages are, for (a), 98. 6; for (b), 97. 7, and for (c), 97 words.

The Dutch vocabularies show greater differences i. e. , for (a), the average was 42. 9; for (b), 27. 5, and for (c), 30 words.

The author concludes from these figures that this type of school (kindergarten) does not influence the children's knowledge of their native tongue to any significant extent. He is cautious enough not to attribute the differences in respect to the Dutch language entirely to the kindergarten school with Dutch as vehicle, for the children attending these schools live not on remote farms, but in and around the villages, and were children from middle-class families more evenly bilingual - civil servants', lawyers', doctors' or clergymen's families.

Children who listened to the Dutch radio did not differ much, in regard to their Frisian vocabulary, from those who never heard the radio, the average figures being, respectively, 97. 6 and 96. 5 words. For Dutch the difference was slightly greater, i. e. with radio, 35. 9; without radio, 31. 6 words (averages).

The results were classified according to the degree in which words were well known or less well known; if a given word was "known" between 88 and 60 times inclusively, it was classed as "well known"; if between 59 and 30 times, "less" (or "not") "well known", and if between 29 and 0 times, "unknown".

Result: Frisian: 97 well known; 16 less well known; 12 unknown. Dutch: 2 well known; 41 not well known; 82 unknown.

The children were further examined with the

Pintner-Cunningham-Durost test. Although this test is called "a-verbal", the testees must have a fairly considerable passive knowledge of the language if they are to react reasonably smartly. For this reason the customary instructions were translated into Frisian. The author does not call the ratio obtained by dividing the testee's mental age (Binet-Simon) by his chronological age, "intelligence quotient" (I. Q.), but, more cautiously, "performance quotient", and advances arguments to support his contention that, in these cases, to speak of an "I. Q." is incorrect, since the children's performances are completely conditioned by environmental influences.

In Table 32 these "P. Q. 's" are compared with the number of Frisian words in the vocabulary of each individual testee. This table contains seven main columns (I-VII) showing the extent of the vocabulary: I= less than 71; II= 71-80 words, etc.

In each main column there are three sub-columns; the first gives the testee's number, the second the number of Frisian words he or she knew, and the third the "performance quotient". The author prefers to present these actual facts in an orderly arrangement, rather than to work out a correlation-quotient, which, after all, would only serve to conceal the facts themselves.

As a general conclusion, it is said that a larger number of words is a concomitant of a higher "P. Q."; the author, however, draws attention to the great variation in averages, and explains why this should be so.

In Table 35 the number of marks individually obtained with the Pintner-Cunningham test is compared with the testee's word knowledge, the relation between these marks and the testee's chronological age being, therefore, eliminated.

IV. Implications with regard to the curriculum

In his final summing-up, the author submits that the Frisian child is, generally speaking, bilingual in an unevenly balanced way when he enters the elementary school. His Frisian vocabulary is usually four times as rich as his Dutch, and the latter language, therefore, is no proper basis on which to start educating the child. The Frisian vocabulary is quite a normal one, as is evident from comparisons with similar investigations in the Netherlands with monolingual children. On educational grounds, therefore, it is essential to use the Frisian language, in Friesland, as teaching medium in the lower grades.

All the same, the child's knowledge of Dutch, however slight, must not be neglected. For this reason the author advocates the introduction of simple lessons in the Dutch language as a curriculum subject, at an early or later stage - according to the demands of the child's environment - but preferably during his first year at school, the lessons being limited to listening and speaking, so that the child will learn to re-experience, in the second language, what he already knows in his mother tongue. The author makes a strong attack on the "textbook" method, which aims merely at correct spelling. He wants to have the children taught a living language - to have them talking, listening and telling stories about things in which they are interested.

Not until the Frisian pupils have a sufficient mastery of the Dutch language, i. e. can understand and speak it, should this second language be used as teaching medium in schools.

What this amounts to is the establishment of bilingual schools for the whole of Friesland. The author is fully convinced that this would lead to a situation in which the Frisians would use their native tongue for social intercourse in everyday life, while at the same time they would master the national language, Dutch, far more thoroughly than is the case at present, at any rate among those who have had only an elementary education.

SPELLING

9. Simon, Jean. Psychopédagogie de l'orthographe. Paris, Presses universitaires de France, 1954. 128 p.

I. Background and purpose

The author, a specialist in the study of spelling, feeling that too much emphasis was placed on correct spelling and the teaching of spelling in the French educational system, decided to make a research study of common spelling mistakes and the psychological factors which caused pupils to make them.

II. Procedure of the study

Two types of tests in spelling were given to the children selected. A special passage was dictated slowly to them, each passage being repeated the same number of times in each case. The text was written by the author so as to bring out certain words which he felt would be of particular interest. Then tests were given in printed form, the pupils being required to indicate mistakes which had been made deliberately. From the results of the tests in spelling the author was able to formulate a classification of mistakes and through this classification to trace, class by class, the development of spelling ability in the pupil and the points at which different types of mistake tended to disappear.

In order to ensure the validity of the conclusions as to methods of teaching spelling, the children were also tested psychologically and medically. Their backgrounds in acquaintance with rules, phonetics and usage were gone into. Their previous scholastic training was studied, not only in the subject in question but also in reading and arithmetic. They were examined for speech

difficulties and for possible impairments of sight and hearing, and were given verbal and non-verbal intelligence tests. All these factors and also the influence of surroundings have a direct bearing on learning spelling. For example, an only child has more chance of being helped with his homework than does a child with several brothers or sisters, and a child coming from a talkative family will have a greater chance of acquiring facility in spelling than a child from a family where there is little conversation. Social environment also has a direct bearing on spelling aptitude. The author also mentions as a consideration to be taken into account the unexplained fact that girls are better at spelling than boys.

III. Results of the study

In co-ordinating the results of his tests and research, and after consulting such works as:

> Simon, Théodore. Pédagogie expérimentale. Paris, A. Colin, 1924. 275 p.
>
> Pellet, Mlle. "A quel âge sont acquises les différentes règles de grammaire". Bulletin de la Société A. Binet (Paris), nos. 212, 213, 218, 219, janvier-avril 1927.

and other studies conducted by the Department of the Seine and the Société A. Binet, and also the following Swiss study:

> Roller, Samuel. Les enseignements d'une dictée. Neuchâtel, Paris, Delachaux et Niestlé, 1949. 50 p.,

the author concludes that the knowledge of grammar acquired by children in the first five primary grades of the French system may be considered to conform to the following pattern: 1. none whatsoever; 2. plurals of nouns ending in "s"; 3. plurals ending in "s" and the beginning of agreement of adjectives; 4. agreement of adjectives; 5. the greater part of understanding of grammar, in particular, verb conjugations.

He also lists the order in which spelling mistakes in French disappear in the primary grades: 1. and 2. combining words, dropping syllables are the most frequent and disappear first; 3. mistakes caused by faulty phonetics are still frequent; 4. on. phonetic mistakes disappear except for certain difficulties such as the letter "s" between two vowels and the letters "c" and "g" before vowels.

IV. Implications with regard to the curriculum and methods

From the nursery school onwards the pupil should be taught to articulate properly. Proper articulation should eliminate many spelling mistakes, but articulation alone is not enough. Syntax should also be taught, but this should be done according to the age-group's ability to understand. Ability to write fast has an effect on spelling - the teacher should be careful not to dictate too quickly, and he must also bear in mind the child's sensitivity and be careful not to discourage him in any way nor to punish without due consideration.

The author suggests that the following outline might be used in developing a sound curriculum for teaching French spelling:

6-7 years old, acquaintance with sounds taught by reading aloud, copying, and speech teaching;

7-9 years old, acquaintance with sounds and a study of basic vocabulary, study of word construction taught by having the child read aloud, basic rules, memory work and classification of words;

9-11 years old, revision of the study of sound and continued vocabulary work, extension of the study of word construction and simple rules of syntax taught by the same methods as before but introducing grammatical and logical sentence analysis;

11 years old + extension of vocabulary study and study of syntax as well as reviewing word construction, verbs in particular, taught by a study of rules and sentence analysis.

WRITING

10. Bang, Vinh. Etude expérimentale sur l'évolution de l'écriture chez les écoliers de 7 à 18 ans. Thèse, Université de Genève, Genève, Editions médecine et hygiène. 1955. 160 p.

I. Aim of the study

This thesis is based on a comparison between the development of script and cursive handwriting. This comparison does not stop short at a mere critical study of these two ways of teaching writing; it will serve primarily as a working method for establishing certain relationships with which it is essential to be familiar. An analysis of the results obtained will make it possible to define the relationship between the output obtained by script writing and that obtained by cursive writing (at ordinary speed and at high speed), the relationship between both writing speeds, the relationship between the output of girls and that of boys, differences of output due to the nature of the studies concerned and, lastly, the relationship between the speed and quality of the writing. The author also hopes that this research in the field of experimental pedagogy will yield results enabling teachers to evolve a better method of teaching writing.

The aim of this study is to provide facts, and perhaps evidence, concerning the present level of handwriting output (speed and quality), for the two following purposes: (1) verification of the results of a teaching experiment, i. e. introduction of the teaching of script into primary schools; (2) study of the development of writing by taking a "cross-section" at all school levels. The data obtained may serve as a basis for checking output, should a new method, new curriculum, etc., be introduced, on an experimental basis, into a school.

II. Technical organization of the survey

The test consists of two parts: (a) writing at ordinary speed; (b) writing at maximum speed. Each child is given a ruled sheet, prepared before the arrival of the research worker, and is asked to write a sentence which is first written on the blackboard and then read out aloud by the examiner; the latter explains that it contains all the letters of the alphabet except two, there being 100 letters in all. The children are asked to find for themselves the two missing letters. After giving them five minutes, the examiner distributes an index-card on which the same sentence is written and, after the children have read it again, they are given two minutes to write the sentence as well as they can, without dawdling, in their usual handwriting and at their usual speed. If they finish the sentence before the examiner says "stop", they begin to recopy it, without stopping and without beginning a new line.

For the high speed test, the same sentence is written, but the time allowed is one minute only and the pupils are asked to write as quickly, but as legibly, as possible. Spelling mistakes do not count. The pupils are not informed beforehand that the test consists of two parts. The test is collective and takes place in the presence of the teacher responsible for the class concerned.

III. Results

For each of the two parts of the test, the results are classified as follows:

- by school level, from the 2nd to the 13th year of schooling;
- by age, from 7 to 18 years;
- according to the nature of the studies (secondary school or vocational school pupils).

As regards the development of writing at ordinary speed, the following characteristics were noted for both script and cursive writing: (1) development is more marked at the primary than at the secondary level; (2) development of output is directly related to the duration of studies. The writing of an adolescent who leaves school at the end of his primary studies makes very little further progress; (3) since output depends on the pupil's level of studies, the composition of the specimen groups studied may have a considerable influence on the results obtained; (4) if, in selecting pupils for secondary education, there is discrimination between gifted and less gifted children, this leads to a difference in writing speed between those who go on to secondary studies and those who leave school on completion of the period of compulsory education.

A comparison between the different educational levels shows a definite difference between the averages at the primary level and those of the first years of secondary schooling; moreover, the general trend of the averages would point to the fact that script is slower than cursive writing (except in the 10th year of study).

A comparison between script and cursive writing at high speed reveals that: (1) script is slower than cursive writing, and a difference between the two averages is to be noted throughout the entire period of schooling; (2) this difference is considerable from the 5th to the 9th year of study; (3) during the last years of secondary education, the two averages tend to become the same, but without converging completely, as in the case of ordinary speed. Pupils who have learned script writing are unable, at the end of their secondary schooling, to attain as high a speed as those who have learnt cursive writing.

Through comparing the output of script writing and that of cursive writing, it is possible to analyse the causes of a good or poor writing output and to ascertain the factors which determine the development of writing.

1. Schooling

"Schooling" is a much more determing factor than "age". Among pupils at the same educational level, the older pupils do not necessarily write more quickly than the younger ones. If a pupil does not continue his studies, his output remains stationary. Young people who begin their apprenticeship after leaving the primary school and who therefore have little opportunity to practise writing, no longer improve their output. The latter depends on the amount of written work set in the various schools and at the different educational levels. The more time the pupil devotes to writing - not only during writing lessons but in all school work where writing is required - written exercises, taking of notes, etc. - the more quickly he will be able to write.

2. Writing speed and practice in writing involved in secondary education

The "schooling" factor is connected with this second factor. Since secondary school pupils, who must adapt their writing to the requirements of secondary education, are trained in high speed writing, they increase their speed considerably.

3. Nature of studies

The fact that secondary school pupils are divided

into various categories means that there is a difference between the writing speed attained by each category. Pupils in classical secondary schools write more quickly than those in technical schools and the latter write more quickly than apprentices. This difference in output seems to be due to the following factors: (a) level of studies; (b) amount of practice in writing. That is why, at the end of secondary schooling, there is a considerable difference between the writing output of pupils in classical secondary schools and that of apprentices.

4. Joining of letters

A very important factor in fast writing is the joining of letters. If, during the last three years of secondary education, pupils who have learnt to write in script attain the same speed as pupils who have learnt cursive writing, it is either because they join up some of their script letters or simply because they change over to cursive writing.

5. Effects of speed on the quality of writing

In order to write very legibly, it is essential to write at an ordinary speed. Beautiful handwriting, particularly if it be legible, is a slow process. Speed in writing is usually acquired at the expense of quality. As already pointed out, the writing of primary school pupils is of higher quality than that of pupils in secondary schools. It is possible, however, that if their writing were judged on the basis of criteria other than that of legibility, the writing of pupils in classical secondary schools would prove to be of higher quality than that of primary school pupils. These other criteria might be, for instance, the ease with which the letters are formed, the aesthetic appearance of the writing, the pupil's distinctive hand, etc. In any case, it is generally true to say that, at the end of his secondary schooling, a pupil's writing has lost in legibility what it has gained from the standpoint of speed.

IV. Conclusion

The study of the development of handwriting has shown that script is slower than cursive writing during the entire period of schooling.

At the end of secondary education, the same speed is attained in script as in cursive writing (ordinary speed and high speed), whereas, during the last years of primary education and at the beginning of secondary education, there is a considerable difference between the speeds of those employing script and cursive writing respectively.

Two facts are particularly noteworthy. Firstly, the quantitative results obtained in both parts of the test (ordinary speed and high speed) show that, in the primary classes, pupils are able to write faster than was generally thought. Secondly, the joining of letters is seen to be the natural consequence of efforts to attain some degree of speed in writing. Most pupils who have written script at the primary school level change over to cursive writing during their secondary studies. Most of the pupils classified among those who write fastest are pupils who join their letters.

To solve the problem of writing is to solve the ticklish question of speed. Some people will immediately think of shorthand and typing. Although it would probably be a good thing for these techniques to be introduced into schools, particularly secondary schools, the problem cannot be solved simply by replacing writing by other techniques. Handwriting makes education possible and helps in the process of thinking.

The author therefore recommends, firstly, practice in continuous strokes with a view to the gradual joining of the letters - which should be the natural outcome - and, secondly, training in the co-ordination of the various movements with a view to greater speed. The alphabet suggested for this teaching is adapted, at each stage, to the acquisition of these two techniques, i. e. continuous strokes and increasing speed of movement.

Training to write faster would have to be condemned as contrary to educational principles if it proved detrimental to the quality of the writing. In order to safeguard this quality, which depends mainly on legibility, the author recommends that the pupil be taught to write carefully and clearly in accordance with the principle of continuous movement and be required to do drawing exercises in order to co-ordinate the motions of his hand and fingers as a preparation for the continuous writing movement.

Under the present educational system, it seems perfectly feasible to carry out these suggestions. Each teacher will work out his own method of teaching writing, for the success of a method really depends on the person employing it. As to the time-table, it is better to have short lessons, but as many as possible. Writing lessons should be held in an atmosphere of relaxation and confidence and be based on the principle of functional education, their object being to enable the pupil to form his letters quickly but well; he must write fast enough for the needs of everyday life, without detriment to the quality of his writing.

COMPOSITION

11. Laurinen, Inkeri. The development of sentence sense in the light of the results attained in the teaching of composition in Finnish elementary schools. Thesis Turku, 1955. 276 p.

I. Background and purpose

The greatest difficulty in the teaching of composition

in Finnish elementary schools has commonly been the use of punctuation marks. On the other hand, the ability to punctuate is of considerable importance, for on it depends the coherence and sense of the sentence, the paragraph and the whole composition. In the teaching of punctuation in Finnish elementary schools it has been the custom, when the use of the period is first taught, to allow no sentences requiring a comma in compositions. The result has been that when the comma is introduced in the fourth grade the pupils have to completely alter their previous sentence-writing habits. It is quite understandable that such an abrupt change should be partly responsible for poor results obtained.

The purpose of the present study was to compare the results obtained under the old curriculum with those obtained under other curricula, to determine to what extent other factors influence the results, and to find out what aspects should be taken into account in teaching when the method used follows the natural development of the language usage of the child.

II. The test groups and the arrangement of experiments

The subjects were 2,712 pupils of 104 elementary school teachers in different parts of Finland. The number of classes covered was 234. These 104 teachers took part in an experiment arranged by the Elementary School Curriculum Committee and taught according to various curricula. Different teaching methods were also used.

An intelligence test was conducted at the end of the first experimental year before the examinations in composition and grammar were held. Questionnaires were sent to the teachers requesting them to describe in detail the curricula and methods of teaching they had followed and to give their opinions as to which they considered the best.

The natural development of the child's sentence sense was followed by studying sentence structure in the writings of the children in successive years in classes in which a free curriculum was employed. As points of comparison, the language of the common people and the sentence structure in textbooks were used.

So-called memory tests were arranged in which children wrote from memory various passages of differing sentence structure that had been read to them previously.

Various phases in the natural development of sentence sense were compared with the teaching sequences presented in grammar books and with the sequences preferred by the teachers.

The mean age of pupils entering Grade 3 in Finland is approximately 9 1/2 years.

III. Treatment of results

The scores of the tests were standardized and the mean scores calculated for the school classes. From the mean achievement score for each class the mean intelligence score was subtracted. The ratios of the resulting differences were taken to indicate the ratios of teaching efficiency. The correlations between the various groups of results and between intelligence scores and mean standings in school reports were computed. The correlations between intelligence scores, the number of simple sentences used and the correct usage of punctuation marks for a class with a free curriculum in composition were also computed.

The variation of the correlation coefficients from grade to grade, and the dispersion of class mean intelligence and achievement scores for different grades were analysed.

The influence of the type of school on the results was studied by grouping results for different school types.

Twenty-four classes were selected by taking the three best and three weakest classes of four grades, and the effects of the sex, age, and experience (years in teaching) of the teachers and, in some cases, of the personal traits of teachers on the results obtained in these classes were investigated. The influence of curricula and teaching methods was also assessed.

V. Results

(a) The development of sentence structure and punctuation in elementary schools

The linking of clauses with connectives is fairly well developed among the more advanced pupils in the second grade, but by the fourth grade most of the pupils have attained a similar stage of development.

The child's use of connectives is fixed to some extent; he prefers certain connectives to others. Individual differences are more frequently found in the use of primitive linking words (and, so, then, and then, and so) than in the use of connectives (relative pronouns etc.).

The recall-writing shows that a child in the third grade is no longer satisfied to write a passage composed of simple sentences only, but adds connectives and prefers to reproduce a text that contains connectives. The child does not in this case employ certain particular connectives, although he may know their meanings approximately, but selects general connectives of his own to replace these.

It has been established, from lists of connectives used, that the written language of primary school children develops from the level of spoken popular language to that of simple textbook language by the end of the third grade and the beginning of the fourth grade.

The period is the only punctuation mark the use of which is grasped in the third grade so that in almost all instances the number of correct uses exceeds the number of omissions and incorrect insertions. The use of the comma does not attain

the corresponding level before the fourth or fifth grade. Instruction in the use of the comma in the fourth grade undermines somewhat the use of the period, proficiency in the use of which is not recovered until after the fourth grade.

The scores for language usage and also those for intelligence increase during one school year by approximately one half of the standard deviation for the grade population. The level of period usage does not rise to the same extent even in three school years.

An average Grade 3 pupil is capable of punctuating his own sentences fairly well. In material collected from 66 Grade 3 classes and 47 Grade 6 classes, the median of the class-average for the ratio of clauses in which the period was correctly used was 69 per cent of all clauses in the third grade and 78 per cent in the sixth grade. Of the correctly punctuated clauses, approximately 50 per cent were simple sentences in the third grade but only 31 per cent in the sixth grade.

(b) The influence of teaching on sentence structure and punctuation

The standard deviations for the mean intelligence levels in different grades are generally smaller than the standard deviations for the achievement test means in grammar and punctuation; this was accounted for by the differentiation of classes as a result of different teaching. A comparison of the standard deviations makes it possible to assess the influence of teaching on various aspects of language usage.

The standard deviations for the achievement test means increase from the lower to the higher grades, obviously as a result of the cumulative effect of teaching. However, the standard deviation of the class means for punctuation tests is relatively large in the third grade, when the use of the period is to some extent artificially inflated; it is slightly smaller in the fourth grade, but rises again later.

The correlation coefficients between class means generally decrease in the higher grades. This is a result of greater diversity between the classes, which can only be due to the differentiating effect of teaching.

The correlation between general knowledge of grammar and the results obtained in punctuation becomes higher in the upper grades. At this stage, logical knowledge of grammar develops into a useful practical art.

The correlation between the results of teaching and the intelligence scores is lower in the upper grades; the same applies to the correlation between the results of completion tests and intelligence scores, which is exceptionally high in the third grade.

Scores relating to the efficiency of teaching are higher on the average in classes of pupils with a low intelligence level than in those with a high intelligence level. Even those third and fourth grades which have a low intelligence level may attain intermediate results in punctuation.

The art of punctuation generally develops satisfactorily, although the general results attained in the teaching of grammar may be poor. The proportion of classes in which a low intelligence level may have retarded the attainment of good results in punctuation was only three to four per cent of the 147 classes examined.

In the material under study, the highest and lowest mean scores, both absolute and relative, in the achievement tests in grammar and punctuation were observed in the classes of intermediate intelligence level. The intelligence levels for the classes (fourth, fifth, and sixth grades) which attained the best results in punctuation were fairly close to the median of the class means for the corresponding grades.

The results of teaching in different classes under the instruction of the same teacher are generally similar in that they are either predominantly above or predominantly below the average.

If the teaching results vary in different branches of language instruction, these frequently follow the same pattern in all classes under the same teacher. This shows that the quality of the teacher's instruction has a significant bearing on the results attained.

Factors that probably have a favourable, though perhaps not a decisive, influence on the results of instruction are the small size of classes, the experience of the teacher (the number of years the teacher has been engaged in teaching), clarity of objectives in teaching, and a large number of hours reserved for the subject.

None of the teaching methods employed in connexion with this study has led to results that have been either so outstanding or so weak that they could not have been attained by a quite different method.

(c) Implications with regard to the curriculum

The sections in elementary school grammars that deal with sentence construction are found to be inadequate. On the other hand, they contain a great deal of superfluous theoretical matter on such points, for example, as the definition of sentences and clauses and the treatment of connectives: excessive attention given to unimportant connectives and attempts made to make the children set forth clearly the distinction between co-ordinate and subordinate conjunctions.

The opinions expressed by the teachers as to the most difficult items in the curriculum and the order of the teaching programmes were inconsistent to a large degree: for example, lower-grade teachers generally proposed introduction of certain items at an earlier stage than upper-grade teachers. Nor was the fact that a method was favoured by a large group of teachers any guarantee of its superiority.

Teachers were more in accord with respect to

teaching methods than with respect to curricula. In general, the teachers tended to doubt the significance of grammatical knowledge for the development of ability to write.

Equally good results in punctuation were attained in the third grade both by those classes that had not learned to analyse sentences and by those that had; in the sixth grade, better results were shown by the latter group. Sixth-grade pupils who are good at punctuation have generally mastered parts of speech and are able to distinguish between subordinate and principal clauses; knowledge of a generally prescribed list of conjunctions is less important.

The use of punctuation marks is subject to great variation. For the most part, each connective and each sentence confronts the child with a different problem in punctuation. Certain regularities are noted in the wrong use of periods and commas.

When grade-placements are being determined, the use of any punctuation mark as a whole should not be considered an indivisible unit. By means of detailed proof-reading tests, it is possible to divide the use of each punctuation mark into fairly homogeneous steps according to the degree of difficulty and thus devise a gradually progressing curriculum.

The correlation between the numbers of simple sentences in compositions and punctuation scores is higher for the pupils in those classes where simple sentence usage has not been taught. For those pupils who use simple sentences more than others, correlation is no longer observed. An examination of coefficients did not confirm the generally assumed effectiveness of the method of requiring the use of simple sentences only.

Very often the best results have been obtained by those teachers who have permitted their pupils to form sentences freely, while in the schools where this freedom has been limited the results have been less favourable.

It appears to be more advantageous to teach at an early stage those types of subordinate clauses which correspond to the level of development of the pupils, even before the theoretical principles of sentence analysis have been learned. In addition, the pupils should be given more freedom in the formation of sentences, for it seems that methods limiting this freedom are more apt to lead to unsatisfactory results than those in which no limitations are imposed.

CHARACTER TRAINING AND MORAL EDUCATION

12. McPherson, Donald. "An investigation into a system of moral instruction". (Summary of a thesis submitted for the Degree of Bachelor of Education, Glasgow University, 1949.) The British Journal of Educational Psychology (Birmingham). vol. XX, part II, June 1950, pp. 139-41.

I. Purposes of the investigation

An investigation was carried out into the effectiveness of a particular system of moral instruction, especially designed: (1) to improve significantly, over a short period of time, the moral judgement of children; (2) to measure objectively the amount of improvement taking place; (3) to correlate the effect of improvement in moral judgement (if any) with the actual conduct of the children concerned.

II. Basic assumptions regarding moral instruction in school

In this experiment the following assumptions were made: (1) moral instruction, to be effective, must be child-centred, concrete, meaningful, and interesting, with the child playing an active, heuristic rôle; (2) the problem situation emphasizes the basic factor in moral training and instruction, i. e. the resolving of the conflict of values; (3) the settling of the problem situation must be realistic, meaningful and, if possible, appealing to the child; (4) the design of the problem situation must be of such a nature that the predominant motives, emotions, and values at stake are readily detectable; (5) the ultimate value of moral instruction is its influence on overt behaviour. Therefore, techniques should be devised which are capable of correlating moral instruction and overt behaviour in some practical way.

III. Design and execution of the experiment

Four schools were selected (School 1, above average socio-economic level; Schools 2 and 3, average; School 4, below average), and two classes in each, one the control group and one the experimental group. Both groups were given moral judgement questionnaires, which also included "confessions" tests and "cheating" tests. The experimental group were then given systematic indirect moral instruction - 15 minutes every alternate school day for eight instructional periods. The instruction consisted of practice in the solution of problem situations, each corresponding to a similar problem in the original questionnaire, involving the conflict of essentially the same motives, emotions, and values. At the conclusion of the experimental period, the experimental and control groups were given another questionnaire.

IV. Results and conclusions

The two questionnaires were treated statistically and the main conclusions reached were: (a) the moral judgement of the children of the experimental group was significantly improved as a result of the technique employed; (b) the behaviour

of the children, as assessed by "cheating" test and "confessions" test performances, remained however unaffected.

V. Limitations and curriculum implications of the experiment

1. Environmental differences were not critically analysed in the present experiment. Nevertheless, a superficial study of the evidence (i. e. , differences between schools 1 and 4) suggested, among other things, that among children of below average socio-economic status ideas on punishment and material damage tended on the whole to be less reasoned, more instinctive and unjust, presumably because of example and personal experience. Some values, however, appear to remain constant, irrespective of environment and socio-economic status. These include kindness, sympathy, and self-respect.

2. Since, as indicated, the behaviour of the children remained unaffected even though their moral judgement was significantly improved, the problem remains for the schools to provide opportunities whereby correct moral judgements are applied in practice as well as accepted in theory. This means that the "exercises" in moral judgement that are provided in the books which pupils read and discuss in class must be supplemented by life-like situations inside and outside the schools for the teachers to use to enable the children to form habits of good conduct.

3. By the use of questionnaires standardized experimentally from results obtained from "normal", "abnormal", and delinquent children, it should become possible to diagnose delinquent or abnormal tendencies in children. Questionnaires eliciting such information would serve a double function. They would serve firstly as a prognostic social instrument designed for the protection of society by the early detection of social misconduct and anti-social tendencies, and secondly they would hold out hope for more effective remedial treatment in respect of anti-social conduct since the chances of remedying anti-social behaviour are normally greater the earlier in life it is detected.

4. The answers of the pupils to the questions, in this case 9,216 answers given by 256 pupils, contain extensive examples of children's rationalizations, "conventionalizations", hypocrisies, moral realism, wishes, desires and interests. They could afford psychological insight into, and may induce a sympathetic understanding of, each child's point of view, his predominant interests, desires, hopes, fears and prejudices, which the teacher should have if he is to guide the development of his pupils.

PART III

ACTION RESEARCH

A. Classroom experiments

TRADITIONAL VERSUS PROJECT CURRICULUM

13. Collings, Ellsworth. An experiment with a project curriculum. New York, Macmillan, c. 1923. 346 p. (Out of print).

I. Purpose of the experiment

The writer, a county superintendent of schools in the United States of America, planned an investigation which would throw light upon the following questions: Can the country school curriculum be selected directly from the purposes of boys and girls in real life? If so, to what extent, with what effect, and under what conditions?

II. Method of procedure

The "equivalent group" method was used. The only factor of difference between the two groups of pupils (one called experimental and the other control) was the curriculum. All other factors, except as indicated later on, were held as constant as was possible, that is, they were made "approximately equivalent". Constant factors included: intelligence level of children, chronological age, number of years of schooling; school achievements, attitudes towards the school and education; conduct of children in life outside the school; community convenience, social and economic status of the districts; parentage of children, nationality, wealth, education, attitudes toward the school and education and conduct in the home and community; length of school term, course of study, library, school equipment, and supervision at the beginning of the experiment; and teachers - number at the beginning of experiment, age, tenure, amount of teaching experience, and education. Among the variable factors were: the curriculum, school library and equipment, number of children per teacher, community meetings, attitude of parents, amount of supervision, teaching experience, salaries of teachers, and supervisory load. The experiment lasted from 1917 to 1921.

III. The schools involved

Three rural schools in Missouri were selected for the experiment. One school, known as the Experimental school, had an enrolment of 41 children, ranging from 6 to 15 years of age; the other two schools, known as Control schools, had a total enrolment of 60 children - 29 in one and 31 in the other - ranging in age from 6 to 16, and adjoined the Experimental school. The features of each type of school were as follows:

Experimental schools

Teachers inexperienced in project teaching.

Curriculum in process of being made through co-operative efforts of supervisor, teachers and pupils.

Procedure stresses the participation of boys and girls and of the teacher, the group working together to determine what to do and the means to be employed.

A large variety of books, papers, magazines, experimentation, construction, and occupational materials and apparatus selected with reference to the purposes of the boys and girls.

The children were divided into three groups (Group I: 6-8 years; Group II: 9-11 years; Group III: 12 years up); time blocks of from 1 to 1 1/2 hours, scheduled according to requirements of four projects: story, handcraft (construction), play, and excursion projects. Subject matter - skills and information - related to the various projects.

Control schools

Teachers experienced in traditional type of teaching.

Curriculum consisted of printed courses of study, outlining in detail the amount of work to be accomplished each quarter of the school year.

Procedures for teaching each of the school subjects outlined minutely in the printed course of study.

Textbooks, supplementary readers and books, references, bulletins, pictures, charts, maps, agricultural and cooking materials and apparatus listed in the printed course of study for teaching each school subject.

Divided into grades, the pupils were scheduled to take up the different subjects in periods varying from 5 to 25 minutes - arithmetic, reading, grammar, history and government, music, agriculture, etc. The aim is mastery of a certain amount of subject matter, set out to be learned, to be tested by examination.

IV. Examples of the project curriculum

1. Handcraft project for the first group (6-8 years old). One of the projects of this group was "making an ironing board".

(a) Selecting the project. One of the boys remarked one day that his mother had no ironing board. He wanted to know if he could make one in school. The teacher suggested first consulting an appropriate reference book to find the design, the specifications, materials needed, and plan for going ahead.

(b) Planning the project. At the next conference, the boy presented his plan, according to an outline which included: kind and amount of material, tools and processes, and method for making the ironing board. This information was written on a piece of paper.

(c) Executing the plan. Following a method of work agreed upon, the boy first selected the tools that he needed, placed the wood on the work trestles, and marked out the various pieces, which were later sawed according to specifications in a simple sketch. The pupil went ahead with the work, consulting the teacher when necessary.

(d) Criticizing the finished project. The group was asked to look over and to comment on the ironing board. One boy said that the legs would not fold up closely as called for by the plan. This led to an examination of the ironing board and it was discovered why it was defective. The defect was later corrected. Other pupils made other comments which led to verification of measurements and remedial work.

(e) Associated projects. To help the boy to improve his workmanship, two projects were suggested by the group for later consideration, the plan for each to be written down and put on the Project bulletin board by him.

(f) Other projects. In a similar fashion, 91 projects were selected and worked on by the pupils of this group during the four years that the Experimental school was in operation. They included: making an apron; a doll's dress, apron, rocking-chair, bedstead, bedding, a doll's house, etc.

2. Excursion project for the second group (9-11 years old). The group decided to take up the following problems: "What are the causes of typhoid in Mr. Smith's home?" The plan included the following:

(a) Visit to Mr. Smith's home. One of the pupils had reported on the existence of typhoid at the Smith's home. The group discussed possible causes of the disease, and decided to make a visit to the Smith's home to study the conditions. A plan for the visit was made.

(b) Results of the visit. At the next meeting the group discussed at length the conditions obtaining in the Smith's home, relating their observations to their own reading on the subject - drinking water, milk, flies, hop-pen, etc. Using the results of their reading, they endeavoured to determine the causes and effects of the disease.

(c) Associated projects. As a result of the study of the causes of typhoid in the Smith's home, the following associated projects were suggested by the pupils and selected for later study: Is typhoid the most prevalent disease in our community? How can Mr. Smith best combat the flies in his home?

3. Play project for the third group (12 years old and up). One of the subjects selected by this group was outdoor games, and a project called "the community play day" was planned.

(a) Several pupils described their experiences in attending community play days, and suggested that it might be possible for the school to arrange for such an event.

(b) The group agreed and listed a number of considerations: date of the event, schools to invite, and programme of activities.

(c) Committees were selected to take part in the programme of activities. The programme included the social period, luncheon period and play activities (outdoor games, team contests - basket ball, volley ball, tennis and baseball).

(d) Invitations were prepared by the pupils, who also made posters and put announcements in the papers.

(e) The pupils selected and learned to take part effectively in 20 outdoor games (golf, football, boxing, etc.), and 13 different types of parties (birthday, musical, Hallowe'en, Easter, etc.).

V. Results of the experiment

The outcome of the two curricula was measured in terms of three categories of achievement: 1. common facts and skills - achievement in the various school subjects; 2. attitudes towards the school and education; and 3. changes in community life. Standardized tests and scales were used to measure the first category of achievement and the Experimental school was compared with the Control school and with national standards. For the second category records were made of such items as school enrolment, regularity of attendance, lateness, truancy, corporal punishment, pupils attending throughout the term, graduates, pupils entering high school, etc. For the third category, homes were observed and records made of the difference between 1917 and 1921 with respect to home and community conveniences - libraries, window and door screens, fly traps and swatters, playground equipment, etc.

The evidence, presented in carefully prepared statistical tables and graphs, is essentially as follows:

1. The mean achievement of the Experimental school in the common facts and skills when expressed in terms of the achievement of the Control schools was 138.1%;

2. The mean achievement of the Experimental school in the common facts and skills when expressed in terms of the achievement represented by national standards was 110.8%;

3. The improvement of the children of the Experimental school in eight ordinary attitudes toward the school and education ranged from 25.5% to 93.1%, whereas the improvement of the children of the Control schools in the same attitudes ranged from 2% to 15%;

4. The improvement of the children of the Experimental school in twelve ordinary phases of conduct in life outside of the school ranged from 35% to 100%, whereas the improvement of the children of the Control schools in the same phases of conduct ranged from no improvement to 25%;

5. The improvement of the parents of the Experimental school in nine ordinary attitudes toward the school and education ranged from 16% to 91.6%, where the improvement of the parents of the Control schools in the same attitudes ranged from no improvement to 30%;

6. The improvement of the parents of the Experimental school in 14 ordinary phases of conduct in the home and community ranged from 20% to 96%, whereas the improvement of the parents of the Control schools in the same phases of conduct ranged from no improvement to 25%;

7. The improvement in ten ordinary conveniences in the community of the Experimental school ranged from 34.5% to 94%, whereas the improvement in the same conveniences for the Control schools ranged from 3.3% to 24.8%.

VI. Assessment of validity of conclusions

Although the difference in outcome in favour of the Experimental school may be accepted in principle, the following points should however be noted:

1. The pupil-teacher ratio in the Experimental school was 20.1, whereas in the Control schools, it was 29.1 and 31.1 - the Control schools were 1 1/2 times the size of the Experimental school;

2. The writer, who was the supervisor in charge of the three schools, devoted 24 hours each month to the Experimental school, as compared with 6 hours to each of the Control schools - the former therefore had four times as much supervision as the latter. "In addition to the actual classroom supervision of the Experimental school, the writer did a great deal of outside work in the way of selecting and gathering materials, working out suggestive plans for the teachers to use in helping the children work out their projects;

3. It can be said that the teachers of the Experimental school probably devoted many more hours to their work and were more enthusiastic toward it - since the plan was a new one and much was being said about the project curriculum in training schools and teachers' meetings; no doubt also, the parents and the pupils were more enthusiastic. All these factors may account, at least in part, for the higher achievement in the fundamentals of the school subjects recorded by the Experimental school pupils as compared with those of the Control schools.

VII. Implications with regard to the school curriculum

It can be said that the curriculum can be related to the purposes of boys and girls in real life to a very great extent, the only limiting factors being the availability of staff (in particular of a well-qualified and dedicated supervisor) willing to devote hours beyond the normal requirement, and of a great variety of appropriate reading material. As the writer put it: "An experiment of four years ... indicates that children can set up their own purposes and can work these purposes out effectively under proper guidance. In so doing it has been apparent that they grew in qualities of initiative, judgement, and self-direction".

AN EXPERIMENT WITH A RURAL CURRICULUM

14. Griffiths, V. L. An experiment in education; an account of the attempts to improve the lower stages of boys' education in the Moslem Anglo-Egyptian Sudan, 1930-1950, London, Longmans, Green, 1953. 160 p.

I. Background and scope of the work

The author, a young school inspector with some experience in India, tells about his first observations of the schools in the Sudan. Learning was strictly by rote. The teachers had had only seven years' education themselves, and of a type similar to that which they were giving to the boys. They knew no English, had practically no Arabic books or magazines, and only notes for their lessons. Education was to be strictly in the fundamentals of the three R's. Every effort was to be made to avoid arousing all sorts of ambitions not only in the minds of the pupils but also in those of their parents.

II. How the experiment started

As a result of a full-scale student strike in protest against new cuts in starting-rates of pay, the Governor-General appointed a committee at the highest level to look into the speeding up of the production of educated boys "whose only prospects lay in Government employment".

Among the recommendations of the committee that were accepted were the establishment of a new training college and the improvement in the standing of elementary teachers and their entry into pensionable service.

III. Distinctive characteristics of the new training college

1. Unlike teacher training institutions in the Sudan and elsewhere, the new Training College

was distinctly rural in atmosphere, and the students were to be trained for rural teaching under rural conditions. "To begin with, therefore, we all lived pretty rough. Drinking water was rationed, we had earth floors, wooden shutters instead of glazed windows, hardly any mosquito-wiring, no irrigation water was allowed for gardens, and so on".

2. The students were selected, not by competitive examinations, but on the quota system, that is, they were chosen according to their home area. The success of this scheme was shown by the fact that the majority of teachers preferred to serve in their own villages.

3. There was a qualifying examination, but "(we) were not very strict about it ... partly because qualities of character and ability to fit into local life were much more important for an elementary teacher than high intellectual attainment. In fact, the very bright might feel restless and unhappy in a village".

4. While topical study and discussion were not abandoned altogether, projects and practical activities were given greater emphasis than learning as such. Some of the projects took the form of investigation into the local irrigation scheme, or into aspects of the local market town. There were also many practical activities, such as running the food stores, constructing a hen-house, starting a fruit-garden, etc. Then, there was farming, including cattle raising. "We re-arranged and lengthened the school day, putting breakfast as late as 9.15 a.m. so as to take advantage of the cool early mornings for work in the field before breakfast or for any other practical activity, such as surveying and handwork."

IV. Reforms undertaken

This was not really an experiment, in the usual sense of the term - meaning the use of experimental and control groups - but a simple, straightforward study and observation of the effects of certain reforms and innovations which were made in order to achieve carefully conceived and formulated educational goals. Among these were:

1. Reform of school inspection. The old practice of inspectors going around to find fault and to frighten teachers into carrying out orders was given up. "Instead, they are expected to adopt a friendly attitude, an advisory tone with the teachers, to have personal and recent experience of teaching children ..., to be in touch with training college staffs and to give demonstrations of new methods in the schools which they visit." This reform was not undertaken by working directly with school inspectors, but by preparing the student trainees to be able to profit from this kind of school inspection. After a period of collaboration with practising teachers who came to the Institute for refresher courses, this approach was shown to stimulate thinking and promote co-operation, and little by little, even though indirectly, the school inspectors caught on with the idea, which they gradually learned to like.

2. Reform of school books. The Institute set itself to provide books on all elementary subjects and activities. The staff - English and Sudanese - started producing the books. The English staff supplied the modern ideas, the Sudanese the local reactions, the actual teaching of the experimental lessons and the work of translation. Every lesson was pre-tested in actual classes before it was accepted for inclusion in the book. By 1950, after 16 years, 120 books and booklets for the elementary schools, plus a handbook on elementary education, had been produced. In all, 88 persons had co-operated in the work of experimenting, writing, translating and illustrating. In addition, a publications bureau had been founded to provide out-of-school reading matter for school children and ex-school children.

3. Reform of the content of the elementary school curriculum. Among the principles that were adopted for improving the content of the school curriculum were:

(a) Modification of the subject matter of lessons to make it more suitable for practical application by the child; an appeal to motives other than fear and competition to encourage learning; (b) the encouragement of certain attitudes and feelings in the child, such as interest and curiosity, sympathy with other people, appreciation of the past, and above all, a liking for knowledge; (c) the recognition of practical work as a part of education. The idea was gradually introduced that practical activities were not only an aid to academic learning but were in themselves a valuable education - valuable "because the handling of recalcitrant clay, straw, paper and card, or the growing of plants in a garden, stimulated the pupil's mind to overcome difficulties, allowed scope for individual initiative, helped to strengthen character, and, in some activities, encouraged the emergence of artistic abilities".

4. Improving the preparation of teachers. At the very beginning, the unusual step had been taken of building special accommodation and supplying extra staff so that the headmasters and practising teachers could come into residence, "living with us for two months at a time ... and learning about the latest handbooks and how to use them". Among the courses provided for training were the following:

(a) Refresher courses in the three R's. This was a roundabout, but effective, way of building self-confidence and the attitude of self-criticism on the part of the teachers. If they knew their subject and how to teach it, they were on their way towards having self-confidence. Gradually two attitudes were engendered in the teachers. "One was to get the teacher to criticize himself instead of waiting child-like for someone to tell him where he was wrong. The other was to build up his professional confidence so that he could

explain to an inspector or visitor why he was doing some particular thing..."

(b) "Long courses". This was a device to get the teachers out of the habits of factual instruction. The new courses required teachers to appreciate the feeling to be put into a lesson, to get away from the purely factual unemotional approach.

(c) Refresher courses on "topics" and aims of elementary education. This was for headmasters, and it was a test of whether the change of emphasis from instruction to encouragement of growth was acceptable to them. After a week's observation and discussion, the verdict of the headmasters was "surprisingly enthusiastic". Some of the reasons they gave were: "they saw boys opening books of their own accord to find information, instead of having to be told to read; they found some continuing to work after the bell had gone or arriving early in the morning to go on with a piece of work; they discovered that the ordinary school subjects came into the "topics" and were connected up in all sorts of new ways, and they saw boys who had finished a job (they worked in groups) turning to help others in their group instead of sitting smug, the first to finish".

(d) Professional courses of a very practical nature for the new teachers, whose total education was nine years. "We as much as said, 'Here are the new handbooks. We will go over them with you. We will demonstrate the method in our school. And then you will go and teach; and we will come and watch and comment'." Class routines were practised. Some of the principles of teaching arising out of the specific practices were discussed: "but serious discussion of fundamental principles was left until the first return to Bakht er Ruda on a refresher course".

5. Follow-up work in the field. The staff of Bakht er Ruda went out on tours of inspection to see how former graduates and those who took refresher courses were making use of their training. This visit itself was a demonstration of a "new method of inspection", which led to the adoption of the following system:

(a) The headmaster of each school kept an inspection book in which the visiting teacher wrote suggestions (preferably in Arabic) and commended good points. He avoided all direct references to individuals. This book was available (except when it was conveniently lost!) for the next visitor, whether from Bakht er Ruda or province headquarters to read and check.

(b) Only if the visitor was fairly senior would he send a private note of his impressions of the school and of individual teachers to the province education officer.

(c) On their return to Bakht er Ruda after the holidays, all those out on inspection were required to turn in (i) a brief report form on each school for our reference files, and (ii) a subject report for the benefit of the staff in charge of the reform of school subjects and those responsible for the training and refresher courses.

(d) There was usually a post-inspection meeting to coincide with the annual visit of the province education officers.

V. Assessment of results

What were the results? It was not always possible to gauge the progress of the experiment on the basis of the opinions of the parents. Very often they were looking for results "which we were not aiming at". Nonetheless, the following were a few of the evidences of progress towards the objectives set out at the beginning:

1. Increased popularity of the schools. School attendance improved. Of those who went to school, most now finished the four-year course, which was a far cry from what it was like at the beginning. Wastage figures had dropped from 26 per cent in the towns in 1930 to 14 per cent at the end of the period, and in the country, from 38 per cent to 18 per cent. Punctual return to school after the summer recess had greatly improved.

2. Change of atmosphere. The author who had been with the project from the beginning said that the most striking thing was the complete change in atmosphere. "The visitor was now allowed to see new lessons, and not the absurd revisions of the past. Most schools would adopt a slightly heightened, on-the-toes version of their normal life rather than the old, infuriatingly artificial display..."

3. Improvement of the school curriculum. To analyse progress in the elementary school curriculum, the writer divided the subjects into three main groups, as follows:

(a) The three R's. On the whole, it was possible to keep to roughly the old standards in the three R's and improve the children's understanding of them. The most difficult subject and one about which Sudanese opinion was the most sensitive, was the classical Arabic language. It seemed to be the general opinion that boys were now reading with much more understanding, but that probably handwriting, reading aloud and possibly dictation had deteriorated a little.

(b) Geography, history and science. There was no comparison with the past. Even the worst lessons were better than under the old system, in that they contained things for the children to do.

(c) Handwork, topics, gardening and physical education. Surprisingly enough, in this respect, where activities predominated, the results were the least satisfactory. There had been shortage of material; and classes of fifty children were too large to handle and supervise properly.

(d) Character training as an aim of education had also begun to appeal to teachers, and some attempt was being made to make use of the curriculum for this purpose. Most teachers were no longer just drilling in information and skill in the three R's.

VI. The significance of the experiment

1. It is to be regretted that it had not been possible to have a more systematic if not entirely scientific, way of assessing the results of the work which, in other respects, was well conceived and highly valid from the beginning. To give just one example, suitable tests could have been prepared to measure the achievement of the pupils in the various school subjects at certain stages, at the beginning and at the end of a course of study. Even if the tests could not have been standardized, for very obvious reasons, still they would have been much more useful than statements of impression no matter how carefully prepared.

2. Nevertheless, this work is highly significant for education in most of its aspects, including, and most especially, the school curriculum. The idea of training teachers for rural schools under a rural atmosphere is only beginning to be taught in a few countries. It is an accomplished fact in the Sudan. In-service training through participation in the various activities of the Institute, including the writing of textbooks and syllabuses - in which headmasters, practising teachers, and students in training worked together - could hardly be equalled, not to say bettered in effectiveness both for the practising teachers and for the would-be teachers.

3. The principle of living "just one stage ahead of the ordinary village, not to set an impossible ideal" fits in with the ideal of training rural school teachers under rural conditions and with the objective of the school being an agency for community improvement. Bakht er Ruda was in fact a teacher training centre, a community centre, and a centre for the production of textbooks and teaching materials, all in one.

4. This is one "experiment" in education which was carried on for an adequate length of time - nearly twenty years - and one in which, throughout, there was continued leadership under the author himself. There is hardly any doubt that the reforms that were instituted during that time should have a good chance of being continued as, in fact, they are being continued under the leadership of others, including a majority of Sudanese educators. This feature - continuity of leadership for an adequate period of time - is a desirable condition for any kind of educational experiment.

5. The attack of the educational problem from all fronts and at the grassroots level is something that any country, however low its standard of economic and educational development may be, can duplicate. This study is significant, not because it solved all the problems, but because it showed how some of the problems may be solved with a minimum of money, staff, and facilities. Here, imagination and insight and a great deal of hard work were the most important assets, and these, fortunately, can be found in abundance in any country in the world.

CURRICULUM BASED ON CENTRES OF INTEREST

15. Blakemore, George L. Integrating the primary school curriculum or teaching through centres of interest. Wagga Wagga; Australia, Teachers' College, n. d. 100 p.

I. Purpose of the experiment

The purpose of the "integration experiment" is to find out to what extent the present educational objectives are justified by the results of experience of classroom teachers. In this particular instance, the aims were:

"To determine the outcomes, particularly regarding the acquisition of factual knowledge and fundamental skills and the development of personality and social attitudes, of teaching in the primary school through centres of interest instead of through ordinary school subjects, through pupil activities instead of set lesson plans."

II. Method of procedure

1. The classes selected were as follows: Wagga Wagga demonstration school, infants - all grades ranging from kindergarten to 2A; the same school for boys and girls - 4th, 5th and 6th grades, and the Forest Hill one-teacher school.

2. The following points of procedure were accepted by all the teachers involved in the experiment: (a) the teaching material was to be handled through centres of interest and not through subjects; (b) before the activities commenced, lecturer and teacher together should have worked out a general course to be followed; (c) the prepared plan was to be modified from time to time in accordance with the pupil's desires or as special circumstances arose; (d) the motivating period was to take the form of a discussion, led by the lecturer or teacher, in which the centre of interest was to be developed; (e) the activities developed around any one theme were to take four or five weeks in the primary school and about three weeks with younger children.

3. Final evaluation of outcomes was to be guided by the following principles:

(a) To ascertain through a frank and open discussion with the pupil, the facts, concepts, attitudes, appreciations, abilities and skills required during the project period.

(b) A simple objective test was to be given by the teacher to see what specific factual knowledge had been acquired.

(c) From observations made by the student observers, lecturer and teacher during the activities, decisions were to be made as to whether the pupils were afforded opportunities of developing social skills, such as co-operation with teachers and fellows in group work, sharing experiences, ideas and materials, helping others

with problems that arise, recognizing the rights of others, accepting help graciously, weighing suggestions, making decisions, criticizing others' views and giving suggestions in a kindly fashion, developing qualities of leadership, and fostering and developing powers of aesthetic judgement and self-expression.

(d) Student observers were especially requested to take particular note of any evidence on the part of the pupils of independent thinking, initiative, self-reliance, keen interest, individuality, etc. They were also to note any indications as to whether, through learning by activity methods, freedom was becoming not only a means of education but also an actual result.

III. The themes of the different classes

1. A local survey. "What we can find out about Wagga Wagga, the city in which we live"; Dunlop's clothing factory, police station, fire station, post office, a local store, the aquarium and pet collection, gas works, agricultural experimental farm, ambulance station. Classes: 2B, 1A, transition 2C; four classroom teachers and two student observers took part.

2. "The fireman". The pupils in the various classes visited the fire station to find out everything concerning the work of firemen, their uniforms, the fire engine, etc. Occasions arose for writing, drawing, spelling and composition, handwork, music, story-telling, etc. One teacher and two student observers took part.

3. "Treasures of our garden". Classes: kindergarten, 2A, with two lecturers, two teachers and two student observers. The kindergarten carried out the following activities: nature study, expression work (finger painting, drawing, modelling, work with cardboard and paper, and community activities, etc.).

4. "Folk music". Class: 4th grade girls, with one lecturer, one teacher, and two student observers. The various groups took different activities, such as: Group 1, rural dwellers; Group 2, minstrels, troubadours, minnesingers; Group 3, music for the moods; Group 4, national folk music.

5. "The housing problem - past and present". Class: 4A boys,with one lecturer, one teacher, and two student observers. The project covered four different stages as follows: (a) an examination of primitive peoples - the demands of their environment, their means of living, the solutions to their housing problems; (b) an examination of the people of the mediaeval period and their housing situations; (c) a sampling of present-day peoples and how they are solving their housing problems; (d) the Australian housing problem.

IV. The outcome of the experiment

1. Each of the classes was evaluated separately on the basis of criteria formulated by the various groups involved, according to the principles indicated above in II, 3.

2. The outcome of the experiment was summarized under the following headings:

(a) Acquisition of factual knowledge. "In every report there is direct evidence that teaching through centres of interest was successful in this direction". However, no figures are given as to the extent of success in the various classes.

(b) Acquisition of fundamental skills. Achievement in this sphere was much more difficult to measure. For example, one reporter considered that there were no new skills introduced in the class he was observing, the skills work being limited to practising certain techniques already acquired.

(c) Development of personality and social attitudes. It was generally agreed from the evidence submitted on the various classes "that the development of self-confidence and self-reliance, of enthusiasm for schooling, of capacity for leadership, of ability to organize, of appreciation of the need for co-operation and purposeful thinking, would be beneficial changes in the child that could confidently be expected to take place in the course of learning by the centre of interest method. The experimental evidence indicates that some of these changes would take place in all participating pupils, while others would occur in isolated cases only".

V. Value and limitations of the experiment

1. The value of the experiment lies in showing that ordinary teachers could start using the centre of interest scheme without having to go through prolonged in-service training. Indeed, "good teachers" have always used schemes of this type with varying degrees of success, and such teachers are remembered partly because they themselves felt the needs of their pupils and organized their teaching around those needs.

2. Does the experiment show that set curricula and prepared programmes are necessary? The evidence gave a negative answer - "curricula drawn up by a fully representative and competent committee are indispensable to the smooth working of an educational system ... In all the experimental classes, the teacher started off with some general outline of the ground that might be covered in the period allowed, but as the project developed the pupils themselves played a very important part in planning their own courses. The principle involved was that while the mature mind of the teacher should keep the activities running in certain channels, the children's own needs and what would satisfy them were best known to themselves".

3. Has the experiment proved that subjects can be abolished? The evidence from the various classes seemed to show that "nowhere in the description of the work done were subject names needed to explain activities". However, there

was no general agreement among the teachers that the basic skills could be integrated into the centre of interest scheme. In fact, in some cases, there was vigorous opposition to any such move.

4. The difficulties encountered in interpreting the results could be explained, at least in part, by the absence of "control groups" in the experiment. Also, there were no objective data submitted which might be used to ascertain the degree of superiority of the scheme, if indeed it was superior over the traditional subject-to-be-learned curriculum.

B. Evaluation of curricula

IS FOUR-YEAR COMPULSORY SCHOOLING ADEQUATE?

16. Flores, Gerardo. A study on functional literacy for citizenship in the Philippines. Manila, Joint Congressional Committee on Education, 1948. 50 p. processed. See also: Fundamental education; a quarterly bulletin, vol. II, no. 3, July 1950, pp. 24-28. Paris, Unesco.

I. Background and purpose of study

The Constitution of the Philippines requires that the Government shall provide free to every child of school age at least four years of primary instruction. The adequacy of this minimum education as preparation for citizenship in the country has been questioned. In 1924 the Monroe Survey Commission composed of American and Filipino educators administered tests to adults who had left school to gauge how permanent was the school learning they had acquired. Among other things the Commission found that "For those who had but three years of schooling, command of English has practically faded out ... Seven years of schooling, on the other hand, appears to promise real permanence".

In 1940 the Government reduced elementary schooling from seven to six years and shortened the daily school attendance period so as to allow for two sets of pupils for each teacher. Widespread dissatisfaction with the results of these changes led to the educational inquiry made in 1948 by a Joint Committee on Education assisted by a team of Filipino educational workers. One of the Committee's studies sought the answer to the following questions: Is the four-year compulsory and free primary education in the Philippines as provided by law adequate for the attainment of permanent functional literacy for citizenship? If not how many years of schooling would be required?

II. Procedure and materials

1. As used in this study functional literacy means: (a) to be able to read satisfactorily such reading material as ordinary letters, newspapers, notices, signs, advertisements and tax receipts; (b) to be able to write an ordinary letter; (c) to be able to make computations involving the four fundamental operations and to solve problems of day-to-day living.

2. Test materials. Tests to gauge the abilities mentioned above were originally prepared in English. The equivalents in the first five major Philippine languages were subsequently made and after preliminary trials, used in appropriate places throughout the whole country. In the reading test, six common abilities were included, i. e. understanding a news item, reading a letter, interpreting signs and notices, getting specific information from an advertisement, checking a tax receipt, and reading a commercial label. Ten simple arithmetic problems which the ordinary citizen is expected to be able to solve and which require proficiency in the four fundamental operations, made up the arithmetic test. For writing and language the test consisted of writing a simple letter inviting a friend to a party.

3. Size of the sample. A tally of the cases scattered throughout 31 out of 50 school divisions of the Philippines showed that 6,974 pupils in Grades III, IV, V, VI and the first year of high school and 6,052 adults who had completed Grades II, III, IV, V, VI and VII were included in the survey. Approximately one half of each group, according to grade, took the English version of the tests while the other half used the vernacular versions. A sampling procedure, which eliminated extreme cases, ensured that the groups in each grade were more or less equated. Adults and pupils of average ability only were included. On an average the adults had left school from 15 to 17 years earlier.

III. Limitations of the study

No previously developed norms could be referred to as a basis of comparison, and only a written language test could be used. In evaluating the performance of the pupils one should consider the fact that they have been schooled under the two-sessions-a-day plan in the primary grades which provides a shorter daily session than was the case when the adults attended primary school in 1938 and the preceding years. A possible factor tending to offset this disadvantage to the pupils is that their teachers today have higher qualifications than the teachers of the adults who left school some 15 years ago.

IV. The Findings

For want of space, we can present only a summary of the numerous tables, and then only on the parts pertaining to adults. We may point out, however, that the findings pertaining to schoolchildren were, in general, in agreement with those pertaining to adults.

1. Findings in the English version of the tests

(a) The results for those who completed only the third grade were unsatisfactory. Of those who had completed Grade IV, less than one-half could be considered 73% or more efficient in the reading abilities tested, while only a little more than one-third passed (70% rating) the problem-solving test in arithmetic. Their record in language was better, but could not be considered satisfactory. Only in writing did they approach a satisfactory standard of attainment, i. e., more than seven out of ten could write legibly.

(b) Those who had completed Grade V did better. More than three-quarters of them could write legibly, and 64. 2% wrote a satisfactory letter in English. In problem-solving in arithmetic less than one-half of them (47. 4%) did satisfactory work. About two-thirds (73%) could read reasonably well.

(c) Adults who had finished Grade VI seemed to have acquired a permanent hold on reading abilities - nearly four-fifths of them showed at least 73% proficiency in the test. Their showing in language was about the same - 80% of them were rated good or fair. Only about 1 in 10 could not write legibly. The only test in which their performance was unsatisfactory was in problem-solving in arithmetic - one-third of them were deficient in this respect.

(d) Grade VII graduates seemed to have acquired learning skills that would last throughout their life-time. Their performance was as follows: seven out of eight were 73% efficient or better in reading; three out of four were 70% efficient or better in problem-solving; 89. 8% were proficient in writing and 85. 7% proficient in language.

2. Findings in the vernacular version of the tests

(a) In writing, 72. 6% of the adults who had completed only Grade IV had fair or good rating, but their work was not satisfactory in any of the other tests - reading, problem-solving, and language. Those who completed Grade V did a little better, but not well enough to satisfy pass requirements.

(b) Those who had completed Grade VI had satisfactory marks, on the whole, in writing, language, and possibly reading. There could be little doubt that completion of the seventh grade was sufficient for attaining satisfactory standards in all the tests. In problem-solving in arithmetic, for example, in which their record was the poorest, 62. 2% of those tested were 80% proficient or better.

V. Curriculum implications

1. Considering conditions in the Philippines where, to mention only one distinctive factor, the medium of instruction has been and continues to be a foreign language (except in recent years when the vernacular has been introduced in the first and second grades of the primary school), the requirement of four years of compulsory education cannot be regarded as sufficient preparation for citizenship. It was for this reason, and because the findings of this study have become widely known, that the Congress of the Philippines approved in 1953 the so-called Elementary Education Policy Act which raised the standards of compulsory education from the completion of four to the completion of seven grades, thus bringing the school-leaving age to 14 or 15 years. In 1957, as an economy measure and in order to enable every school-age child to go to school, the school-leaving grade was lowered to Grade VI.

2. One interesting conclusion that was drawn from the results of the study was that learning in school to read, write and figure in English (a foreign language) assists the learner when he comes to acquire similar abilities in the native language, even if no formal teaching in the language is given. A large amount of transfer from English to the vernacular took place in the abilities needed in reading, problem-solving and letter writing. By learning English, a Filipino child has the additional advantage of being able to obtain information from English language sources.

3. Despite certain features peculiar to the Philippines, this study offers a workable procedure for finding out, in any given country, how adequate are the requirements (as to age and grade-leaving) of compulsory attendance.

4. This study suggests the importance of improving the school curriculum and of having adequately prepared teachers to teach it.

A COMMUNITY SCHOOL CURRICULUM EVALUATED

17. Philippines. Bureau of Public Schools. "Results of the /first, second, third, fourth, fifth and sixth/ year/s/ of the experiment in Iloilo with the use of 'Hiligaynon' as medium of instruction in Grades I and II." Bulletin (Manila), nos. 9, 12, 14, 16, 1953; no. 6, 1954; no. 9, 1955. See also: Bureau of Public Schools. Evaluating the Iloilo community school program. Manila, Bureau of Printing, 1954. 126 p.

I. Background and problems

One striking fact in many underdeveloped countries is the wide gap between conditions in the homes of schoolchildren and the conditions they encounter

at school. There are two reasons for this: first, the majority of the parents of the schoolchildren are illiterate, and second, the language of the schools is foreign. This has been the case in the Philippines where the language of instruction has been English since 1898, despite the fact that in most homes English is seldom spoken - a situation which often tends to create two worlds for the schoolchildren, an English world at school and a "vernacular" world at home. The following questions thus arise:

1. What would be the effect upon the social, economic, political, and cultural development of Filipino children, of teaching through the mother tongue in the first two grades, followed by teaching in English in grades three to six of the elementary school?

2. Which is more effective as a medium of instruction in arithmetic, reading and social studies: English or the local vernacular?

II. Procedure

1. The experiment was started in 1948-1949 on a limited scale in the province of Iloilo, and continued for six years up to 1953-1954. The experiment was conducted with due care so as to satisfy the requirements of scientific procedure and criteria with regard to the control of the factors involved and the validity and reliability of the tests used.

2. An experimental group of classes was taught through the vernacular, and a control group of classes was taught through the medium of English. Teachers for these classes were carefully chosen and equated as far as possible for educational qualifications, experience and efficiency, and an equal number of schools was represented in each group. In each group one school was located in an urban area, three in agricultural areas and three in fishing villages. Care was taken to ensure that the schools selected in each district were representative of the poorest, average, and richest economic levels. The pupils in the two groups were similarly matched in age, intelligence, economic status and other factors.

3. To measure achievement, equivalent series of tests were used (one series in English and another in Hiligaynon). These included: four tests in arithmetic (counting objects, counting by 1s, 2s, 4s, etc., computation involving the four fundamental processes and simple fractions, and problem-solving); five tests in reading (picture-word recognition, word meaning, and paragraph meaning); and four tests in the social studies (selecting the correct behaviour depicted in pictures, selecting the correct answers to judgement questions). The so-called "critical ratio" technique was used to establish the "confidence that can be placed in the recorded difference between the average achievement of the two groups of pupils".

III. Results of the experiment

A. Academic

At the end of each school year the results were measured. In the sixth and last year of the experiment, the experimental group maintained its superiority over the control group in the various subjects involved. The results of the experiment during this period suggest the following conclusions:

1. That the pupils in the experimental group were superior to those in the control group in social studies. The difference was statistically significant.

2. That in arithmetic and reading the pupils in the experimental group had an advantage over the pupils in the control group, but the differences were not statistically significant.

3. That in language, the pupils in the control group were better than those in the experimental group - as they had also been after the fifth year of the experiment; however, the difference was not statistically significant in either year.

4. That the pupils in the experimental group were more emotionally stable and more emotionally mature than the pupils in the control group, and that they tended to be more dominant than the pupils in the control group.

5. That in spite of its apparent recession in scholastic achievement in the fourth year of the experiment, the experimental group maintained its superiority in the fifth and sixth years of the experiment.

B. Non-academic

1. The foregoing results refer only to classroom achievement. Additional evidence of the superiority of the experimental groups has been gathered which tends to make the case for the vernacular stronger still. This evidence has to do with ability to organize and express thought, ability and interest in telling news and stories, regularity of school attendance, social application, and other relevant characteristics.

2. With regard to these, the testimony of teachers and parents was obtained. The opinion of teachers was as follows:

On the ability to organize and express thought: of those teachers using the vernacular, seven rated their classes above average, and one, excellent. The eight teachers using English as medium of instruction all rated their classes as average. "To the question 'Which of your classes has the greater desire to read and write?' the answer was ... Hiligaynon. The teachers stressed the phonetic ease of the vernacular, and the fact that it is the home language ... On the application within the school premises of instruction in personal behaviour, social behaviour and health habits, five teachers consistently rated their classes conducted in Hiligaynon above

average; one rated them average in social behaviour and above average in the rest. The eight teachers who conducted their classes in English all rated them average in regard to these matters."

3. The opinion of the parents corroborated that of the teachers. When asked which children - those taught in the vernacular or in English - had the greater desire to attend school regularly, had greater love for reading and writing, had the better ability in telling news and stories heard or read, had the greater desire to transmit to parents what had been studied in school, had shown greater respect for parents, better health habits, and greater ability in doing home chores, the parents gave a verdict overwhelmingly in favour of the former, i.e. those taught in the vernacular.

4. With regard to the all-important problem of bridging the gap between the school and the home, the experiment produced marked results. Instead of confining themselves to teaching the three R's, teachers visited homes and taught parents to build sanitary toilets, plant vegetables, raise poultry and pigs, construct drainage systems, prepare balanced diets, tend children and the aged, and improve the privacy of the homes. In class, teachers made these activities the bases of studies in reading, language, arithmetic, and civics. Pupils visited home gardens, the town post office, the doctor's clinic, the agricultural experimental station and other public places. Later, discussing what they had learned through observation, they were led to show their parents how their knowledge could be applied to the problems of the home and community. Then, children and adults, using the same language, began to work together to improve living standards. The teachers acted as guides, also using the native language, and exemplified the practices advocated in their own homes.

IV. Confirmation of the results of the experiment

Before the experiment was completed (after the fourth year) the Director of Public Schools, upon the request of Dr. Aguilar, appointed a committee of five members to make an independent evaluation of the community school programme of Iloilo. In general, the committee confirmed the overall results of the experiment in so far as the scholastic and non-scholastic features were concerned. Among the conclusions reached were the following:

1. In bridging the gap between the school and the home, the possibilities of starting with the vernacular and continuing with English after the first two years "can be tremendous. Its possibilities of improving the community and its people are great".

2. The public schools of Iloilo, on the whole and apart from the experimental classes have done very creditable work in improving the life of the people in the rural communities, particularly along sanitary, economic and social, and cultural lines. "The community gardens, the reading centres, and the general cleanliness of the towns and barrios visited by the Committee are proof that the efforts of the schools are bearing fruit."

3. Have the curricula affected living conditions in the Iloilo communities? "The answer must be: yes, and even in the poorest of schools it would still be: yes. But what marks the Iloilo programme as different from the other local programmes is the determined, reasoned-out push by the teachers and the parents working more closely together than in other provinces."

4. There was evidence of influence exerted on the homes by the barrio schools. "Here we saw a really attractive group of inexpensive but well-conducted bamboo homes with well-kept gardens..." The model barrio adjoined a school which had well-kept gardens and clean surroundings.

5. The teachers were asked if the community school approach increased their load of work. The answer was generally: yes, but two-thirds of them said that "if they were parents of school-children, they would prefer sending their children to classes using the integrative-activity (another name for the community school approach) programme to sending them to classes using the traditional programme".

V. General conclusion

1. As would be expected in experiments of this kind, the results were not strictly uniform and consistent except in indicating generally the superiority of the experimental group over the control group. It was natural that the experimental group, which used its native language in the first two years, should be superior in scholastic achievement to the control group, which used a foreign language - English. What is significant is that the experimental group, generally speaking, maintained its superiority - except at the end of the fourth year - over the control group. In addition it was not expected that the experimental group would catch up with the control group in knowledge of English after six months' acquaintance with this language.

2. Summing up the evidence, Dr. Jose V. Aguilar, the author of the experiment, said:

"There is no point now in referring again to the extraordinary superior learning in the vernacular to that of English in the first two grades. The other result may bear repeating because to most people it was unexpected: faster educational maturation in the mother tongue together with advanced age caused, in the third grade, speedier learning in English in about six months than had two years and six months instruction in English only. These are the results from pencil-and-paper tests of the objective type. We now have the results, at the end of the third grade, on free expression in English as represented by oral reading, spoken language, and written language.

In the first two (oral reading and spoken language), children with a two-year foundation in the vernacular were slightly better; in the last (written language), children who started with English in the beginning (first) grade were only slightly better than those that were taught in Hiligaynon during the first two years."

VI. Implications with regard to the curriculum

1. The Philippine school system was taken by storm, so to speak, as a result of the Iloilo experiment. Before the results were generally confirmed, teaching through the vernacular in the first two grades was started in several provinces. This was in advance of the availability of adequately trained teachers and of teaching materials in the various local dialects. Fortunately, the disastrous effect of this haste is being realized and efforts have been made to correct past mistakes and to forestall future errors.

2. In like manner, the community school movement - which started before the Iloilo experiment - was considerably emboldened by the early findings of the experiment. As a result, community education has been declared a national policy, again in advance of adequate preparation for it in terms of teachers, curriculum, and school buildings and equipment. Every effort is being made to correct errors which lay largely in the over-emphasis on outside activities at the expense of sound education and training of the children.

3. The community school movement and teaching through the vernacular in the first two grades are permanent forward steps in the development of the Philippine educational system, the curriculum of which will henceforth include two closely integrated aspects: basic learning and practical activities.

A SURVEY OF PRIMARY EDUCATION

18. Egypt. Ministry of Education. Primary Education Survey Committee. /Report./ Cairo, Documentation Centre for Education, 1957. 424 p. (In Arabic).

I. Background

The present six-year primary school in Egypt is the outcome of many reforms which were introduced at varying intervals over the last few decades. In order to ensure the sound and progressive future development of education at this level, the Ministry of Education established a committee in 1955, composed of representatives of its departments, to study and submit recommendations on all aspects of the primary school.

II. Aims of the study

The terms of reference of the Committee were "to examine the various aspects of primary education, including school buildings and equipment, qualifications and adequacy of teachers, teaching methods, the curriculum and syllabuses, pupils' attainments, and the relationship of the primary school to other levels of education".

The Committee was also asked to include in its report recommendations on ways and means of implementing a ten-year plan designed to provide educational facilities for all primary school-age children.

III. Scope and limitations of the study

The survey work undertaken by the Committee, whose members were active or former high government officials, covered three educational districts from which 62 schools were selected for detailed investigation. The schools investigated had an enrolment of 22,363 pupils and a total of 772 teachers. In addition, the survey covered groups of parents from each of the three districts.

The schools from which the sample were taken were a representative selection of the 8,000-odd primary schools in Egypt, and the three districts selected were chosen to reflect the prevailing types, i.e. urban, urban-rural and rural. The study dealt with all aspects of primary schooling and it was inevitable that the share given to the question of curriculum was comparatively restricted.

IV. Methods of study

The report took two years to complete, the larger part of the time being taken up by survey work. Sets of questionnaires were worked out for parents, children, teachers, head teachers, and local and district inspectors, and were first tested in a pilot area before being finalized. Once the work in the pilot area was concluded, the Committee began its tour of visits, interviewing the district educational personnel and school staffs to determine their views on the adequacy or otherwise of primary education. At the same time the same questionnaires that were being used for the interviews were distributed among teachers and inspectors in areas which were not visited, so as to enable the Committee to make as wide a survey as possible.

Briefly, the questionnaires circulated among the teachers asked for the following:

1. Complete information on the personal history of the teacher;
2. Preferred location of work and reasons for such preference;
3. Details of subjects taught and extra-curricular activities;
4. Possibility of becoming a form teacher (as opposed to a subject teacher);
5. In the teacher's opinion is the purpose of primary education to develop the child's general

knowledge, to prepare the child for a vocation, to erradicate illiteracy or to prepare the pupil for the post-primary school?

6. The faults the teacher finds in the subjects he teaches and his suggested remedies;

7. The opinion of the teacher on whether the present curriculum is adequate for the development of the child in health, knowledge and experience, and education for citizenship. In the case of a negative reply, the teacher's suggested remedies are asked for;

8. The availability of reference and reading material;

9. The opinion of the teacher on the textbooks being used;

10. The benefit or otherwise derived from visits by inspectors and the degree of guidance received;

11. The opinion of the teacher on in-service training and benefits derived from it - promotion, improvement in teaching ability, relations with the staff and pupils;

12. Suggestions for the improvement of the pupil, the school, the administration, etc.

The questionnaires for the head teachers did not differ greatly from the above. Additional information requested from them dealt with the rôle assumed by the school in the community, the efficiency of the staff, the problems of the school, e.g. absenteeism, shortage of equipment, etc.

The interviews with the pupils were designed to assess attainment levels so as to enable the Committee to evaluate the results of the questionnaires more accurately.

The Committee divided itself into five sub-committees in charge of teachers, pupils, relations between primary and other educational levels, school buildings and administration. Sub-committees with co-opted members were formed to take charge of the work with parents in three districts.

V. Outcome of the study

The report is divided into three sections: 1. the questionnaires and an analysis of their replies; 2. a description of the state of primary education in the whole country; 3. the recommendations of the Committee based on sections 1 and 2.

The replies confirmed many of the Committee's original suppositions. The analysis revealed that the curriculum was insufficiently adapted to the real needs of the rural school; there was a real shortage of equipment and many of the textbooks could be improved.

VI. The school curriculum

The findings with regard to the curriculum showed that in the opinion of teachers, head teachers and inspectors the present curriculum was academically satisfactory in general but that it failed to develop in the child a sense of social responsibility and care for health and hygiene. The remedies proposed in the replies were the use of social workers, increased medical supervision and the teaching of hygiene. Head teachers and inspectors were satisfied with the remaining sections of the syllabus.

The trend of opinions expressed by the teachers on the other subjects could be summarized as follows: in the teaching of the mother tongue and of religion the syllabus was satisfactory but teaching methods were criticized mainly because the teacher had to resort to cramming as the weekly number of hours was insufficient. The social sciences were found to be unsatisfactory mainly because the prescribed textbooks failed to maintain the pupils' interest. The teaching of arithmetic and natural science could be improved if demonstration lessons were possible and the textbooks made less abstract.

In its recommendations, the Committee expressed the feeling that the curriculum needed to be modified to concentrate on developing the personality of the child and that the syllabus should be revised to create a closer link between the child and his environment. The curriculum should also be made to revolve around the interests of the child and at the same time to provide him with the minimum requirements of knowledge necessary for all-round development.

The Committee felt strongly that the school week should be at least 30 hours so as to ensure that the pupils spend sufficient time of the day at school. There were too many cases of schools which fell short of this requirement because of staff shortages. This would also encourage the use of individual class teachers and provide for free activity periods, both of which were considered desirable.

Other recommendations included the continued suppression of end-of-year examinations for promotion purposes, the extension where possible of the minimum length of the primary course to 6 years and the enforcement of admission of children as soon as the compulsory age of six is reached.

DETERMINING OBJECTIVES THROUGH EVALUATION IN BASIC SCHOOLS

19. Laljani, M. R. Evaluation in basic schools. New Delhi, Institute of Rural Education, 1955. 80 p. tables. (Studies in basic education, no. 1.)

I. Background

Basic education can now be said to have established itself quite firmly since, with the exception of a few die-hard critics, it has the support of "almost all the well-known educationalists of India". The Government of India has made it a matter of policy to develop a system of education, such as the

Basic System, which will both contribute towards the economic development of the country and meet the educational needs of children. Conceived by Gandhi in 1937, basic education has since been put into operation in almost every State of India. Comprising a course of eight years, for children aged 6 to 14, basic education aims to provide elementary education through productive activity, which in later years takes the form of basic crafts suited to local conditions.

II. Aims of the study

1. To bring out in detail the enlarged concept of evaluation, distinguishing it from the traditional examination - a matter of particular necessity in the context of basic education.

2. To define the place of academic examination vis-à-vis the total programme of evaluating the children's day-by-day progress in intellectual, social and physical spheres in the light of the objectives of different activities in basic schools.

3. To point out the extent to which the basic schools have been successful in developing a practice of evaluating the children's progress in keeping with the spirit and ideals of basic education, and to attempt to suggest how a comprehensive evaluation programme should be put into practice.

4. To focus attention on the possible difficulties in the way of practising such a programme.

III. Scope and limitations of the study

1. Because of limitations of time and facilities, this is not an assessment of whether and to what extent the objectives of basic education are being achieved in practice. This is a study of evaluation in rather than of basic schools.

2. India being a very vast country, it has not been possible to secure anything like an adequate sampling of the actual situation throughout the whole nation. For this reason, the survey has been limited to Delhi State, and then only to a small part of that State.

3. While suggestions have been made for the introduction of achievement tests, intelligence tests and tests for rating the development of personality traits in basic schools, it has not been physically possible to formulate such tests.

IV. Methods of study

1. An attempt has been made to gain a fairly representative view of the practice of the Delhi State basic schools in general. Out of a total of 150 Government basic schools (excluding most of the primary schools recently converted into basic schools), 50 schools were selected. Because of the difficulties of transport, the selection of the 50 schools has been confined to only one region which may be considered a representative one.

2. An eight-page questionnaire in Hindi was used as the working basis of the survey. This was really a "schedule" which was filled by the worker after interviewing the person concerned who, in most cases, was the head of the school.

3. The inquiry covered the following:

(a) Examination and tests used: type and frequency, relation of results to promotional policy, evaluation of objectives and criteria in teaching different subjects against children's achievement, evaluation of health and hygiene practices, and tests of personal characteristics, i. e. intelligence;

(b) Methods and criteria of grading: numerical, descriptive (in the case of performance in a number of different fields of activities);

(c) Records of evaluation: types, proforma, and reports to parents.

V. Results of the study

1. The results of the study are summarized in fifteen tables which are appended to the book. The tables, in general, show the number and corresponding percentage of the fifty schools using certain practices, i. e. the number and percentage of schools in which some specific objectives of teaching the mother tongue (e. g. reading a daily paper with comprehension) could possibly be attained by Grade V children.

2. Since evaluation as such is not a concern of this publication, only those aspects of the results of the study affecting the curriculum - the objectives of the basic schools and the content of the curriculum of such schools - have been included.

VI. Implications for the school curriculum

This study reveals current thinking and practice with regard to the curriculum in the fifty schools included in the survey (perhaps the largest number ever covered in a single survey in India). The aspects that are most significant for the curriculum are as follows:

1. The general aim of most curricula is the "mental, physical, social, cultural and ethical development of all the pupils"; scope: free, universal and compulsory for all up to a certain standard; content: a minimum standard of skills of communications (3 R's), vocational (craft-work) efficiency, social adjustment (in social groups at all levels, family, neighbourhood, vocational group, community, national and world), maintenance of physical health, etc.; method: learning through a purposeful productive and educative activity that is related to life and environment.

2. With regard to the different subjects, in Grade V, for instance, the objectives, as determined from a statistical tabulation of the results of the questionnaire, were as follows:

The mother tongue should be taught to enable the child, (a) to express himself accurately on familiar subjects, (b) to write an account, in his own words, of things told to him earlier, (c) to read children's

magazines with comprehension, (d) to read a daily newspaper with comprehension (10 schools), and (e) to write correctly a piece of dictation from an unseen passage of the standard of his textbooks.

Mathematics should teach him (a) to measure the area of a square plot of land, (b) to calculate the earnings of a worker at a given rate, (c) to calculate the profit or loss of a school or village craft, (d) to calculate the average land holding per head in the village.

Social studies should enable the child, (a) to appreciate the implications of important happenings in India and abroad, (b) to plot the "locale" of these happenings on the map (6 schools), (c) to participate in a village co-operative society (5 schools), (d) to understand the educational advantages of cultural entertainment in the village, (e) to have a right attitude towards the struggle for freedom in India and other colonial countries, (f) to know in which parts of India the raw materials for crafts are produced, (g) to want to participate in the improvement of village sanitation, and (h) to appreciate the working of such institutions as maternity and child welfare centres (6 schools).

General science should enable him, (a) to understand the occurrence of floods and droughts, (b) to take a thermometer reading of a sick person (7 schools), (c) to understand how the world came into being, (d) to understand the stages of growth of a plant, and (e) to understand the harm done by a house-fly.

3. As far as the application of knowledge is concerned, in particular knowledge of health, the evidence seems to vary with the objectives. In other words, the results of the questionnaire seemed to show that in "practice" the schools lagged behind the goals. Thus with regard to the frequency of medical check-ups, 1 school had a check-up twice a year, 17 schools once a year, 2 schools once in two years, and in 30 schools no check-up has ever been made "so far". As to the health habits of children, the evidence showed that greater attention is being given to this matter, i.e.: in 44 schools, a check-up was made daily, in 1 school, twice a week, and in 5 schools once a week only. Only one school considered the "practice" or "application" of knowledge in grading for promotion, and then only in varying degrees, i.e. cleanliness, discipline and general discipline (7% of the total), craft work of the year (33% of the total), and day-to-day general performance throughout the year (30% of the total).

4. The study seems to show the need for systematic and continuous evaluation of actual results compared with "intentions" or "objectives", the general conclusion being that the gap between theory and practice may be very great indeed.

5. Nevertheless, the study is significant in that it shows that it is possible, by means of systematic evaluation, to determine the extent to which the basic schools of India are thinking about desirable goals and are consciously striving to attain them.

C. Leadership training

20. Miles, M. B., and Corey, S. M. "The first Co-operative Curriculum Research Institute". In: Research for curriculum improvement. Washington, D.C., Association for Supervision and Curriculum Development, 1957. pp. 305-348. (1957 Yearbook.)

An account of an experimental one-week training institute, attended by 43 top-level curriculum research workers from different parts of the United States, who met the "status leadership" criterion, and whose experience included leading or working in co-operative research groups, supervision of research, graduate study, workshop experiences, publication, and activities of state or regional committees.

I. Purposes

1. To further the insight of curriculum leaders into the co-operative curriculum research process; 2. to further the ability to diagnose human relations problems in co-operative curriculum research; 3. to practise and evaluate certain skills in co-operative research, leadership and planning; 4. to relate the learnings of the institute to specific curriculum development problems faced in the "back-home" situation.

II. Planning

1. A three-day planning session was held by 9 staff members of the institute drawn from the sponsoring organizations, whose responsibilities were as follows: 1 served as administrator, 1 to co-ordinate the general sessions, 1 for research, and 6 as leaders in the work groups.

2. Different from a workshop or conference, the institute had the following features: planned and approached as a "laboratory", i.e. a situation in which members could examine their own behaviour critically, using the experimental method; use of many different but complementary learning situations, to improve members' attitudes and methods of work; preplanned, rather than co-operatively planned and revised during the meeting as in the typical workshop; training-centred, rather than discussion-centred.

3. The plan included the following activities: Work groups of 14 to 15 members, which met

for one three-hour and five two-hour periods during the week, to provide training in human relations and the research sensitivities and skills needed for co-operative research.

Special groups, planned in advance to give direct instruction for either two or four hours on specific topics, such as: getting and analysing data about children, quantifying and analysing unstructured data, getting experimentation under way, design for action research, questionnaire and inventory construction, encouraging participation and shared leadership, rôle of the consultant, diagnosing a troublesome school situation, the use of tests in action research, etc.

General sessions, designed to aid conceptualization, to increase sensitivity and in some instances to provide skill training.

Back-home consultation with staff members, for one hour on both Thursday and Friday, regarding the application of the training being acquired to back-home problems.

"Bull sessions", where members met briefly on Monday evening and Tuesday afternoon in small randomly composed groups to share and compare their reactions to the experiences they were having, to blow off steam, and to integrate what they had learnt.

"Discussant" panel, consisting of two members from each work group to meet each day with the staff members concerned, to make suggestions for contribution to the planning sessions.

Staff meetings, held once a day to check progress, to get final briefings, and to make other necessary decisions.

Film showings, attendance at which was optional, on Wednesday and Thursday evenings after supper, dealing with human relations problems.

4. Data were recorded before and after the institute to show the initial and progress status of the participants in conceptual understanding of the nature and purposes of curriculum research, attitudes, beliefs, skills and techniques relevant to co-operative research; and ability to diagnose a complicated school system and plan effective action. To provide a control group, each participant was asked to nominate a co-worker with a similar job and similar job and similar interests, who was asked to rate his own status before and after the institute. His progress was later compared with that of the corresponding participant.

5. Different types of instrument were used, such as: application blanks, sentence completions (examples: "Co-operative curriculum research to me means ...") inventory, case analysis, analysis of rôle-playing, post-meeting reaction sheets, anecdotal records, general evaluation sessions. After the institute, additional data were gathered as follows: open-end responses (participants were invited to send, after they had returned home, letters indicating their reactions to the work); readministration of pretest instruments (sentence completion, inventory, case analysis, etc.) to the participants and their co-workers; and post-institute reaction sheets, which the participants were asked to fill out, to indicate selected factors in their own situation which were helping or hindering them in their work, and to list curriculum research activities which had been initiated or improved as a result of the institute, to make suggestions for a future institute, etc.

III. The training experiences

1. General sessions were usually planned by staff members, but involved, in most instances, participation by non-staff members, particularly in the rôle-playing situations. Tape recordings were made of some of the discussions. Post-meeting reaction questionnaires were distributed immediately after each general session, asking members to evaluate the session. The respondent was asked to indicate the strengths and weaknesses of the session and the things that seemed most useful to him personally. General session no. 4, for example, began with a 20-minute lecture, followed by a rôle-playing demonstration (some members of an elementary school staff were meeting for the fourth time with their principal and a person from the central office, to explore what might be done to involve the total faculty in working on this "reporting to parents" problem). The lecture took up the elements that are involved whenever a group of people meet to get a job done, namely: (a) group background; (b) participation patterns; (c) communication; (d) cohesion; (e) group atmosphere; (g) group standards; (h) group procedures; (i) member behaviour; (j) designated leader behaviour, etc. After the rôle-playing demonstration, the various groups concerned held "buzz sessions" for about 10 minutes, to report their observations. The satisfaction index for this general session (no. 4), which met on Tuesday morning on the subject Characteristics of groups at work, was 4.3, on a scale of 5 (ranks second among eight others).

2. Work groups. There were three basic groups, each with 14 or 15 members, which met for a total of 12 hours. These groups were planned to provide training in tackling the human relations problems of co-operative research, via a laboratory approach. Each of the groups operated differently. The two staff members who worked with the group rotated responsibility as trainer and associate trainer, and kept records of what went on. The anecdotal record of group 2, a representative group, is summarized as follows: (this group met Monday morning, Monday afternoon, Tuesday, Wednesday, Thursday, and Friday for a total of six sessions). The first session was devoted to each member introducing himself to the group and telling what he expected to get out of the meeting. Session 2 was devoted to the discussion of the features of a "case" approach. The next session on Tuesday was given to a critical discussion of the "case"

approach as applied to a specific situation which was described by a tape-recording. Session 4, on Wednesday, took up another case of rôle-playing, also tape-recorded. In every session, including the sixth, on Friday, the members analysed the situation, made critical comments and gave suggestions as to what should have been done instead. After each session, the group evaluated the effectiveness of the meeting. The ratings of the six sessions, on the basis of a 5-point scale, were respectively as follows: 3.5, 4.2, 4.3, 4.6, 4.2 and 4.7.

3. Special groups. Twelve groups ranging in size from 3 to 16 members met with 1 or 2 staff members for either two hours or for double two-hour periods on Tuesday, Wednesday, Thursday and Friday afternoons, to discuss specific problems such as those indicated in II. 3 above. The group that took up the problem of analysing data about children had five members, and met for four hours, two on Tuesday and two on Wednesday. Its purpose was to present and react to as much information as possible that would be of help in connexion with various types and sources of data about children, such as unstructured records, sociometrics, projective tests and behaviour records. Towards the end, attention was given to ways and means of involving people in child study, evaluating the teacher's understanding of the child, interest inventories, and the implications of co-operative curriculum research for child study.

IV. Evaluation

1. Immediate evaluation. This took place immediately following the institute, in an effort to get the reaction of the members to the various "learning" situations. The general question was: How satisfied were the members in regard to the various phases or aspects that were taken up during the week? Satisfaction was expressed on the basis of a five-point scale, from very dissatisfied to very satisfied. For the general sessions, data were obtained for each of the eight situations, orientation, helps and hindrances, work group sharing, etc., the average rating being 4.1 on the five-point scale. The work groups expressed their feeling after each day, and they averaged roughly as follows: group 1, 4.4; group 2, 4.3; group 3, 3.9. Analysis was also made of changes in the attitudes, understandings, skills and techniques of individual members, as they themselves said, and as the members of the staff thought. The staff felt that about one-third of the members changed little, about one-fourth changed a great deal and the remainder were in between. Final oral evaluation was made separately by members and by staff members.

2. Follow-up evaluation. Following the institute, a long questionnaire was responded to by each of the participants, so as to provide an indication as to the extent to which, and in what ways, they had profited from their participation. The questionnaires measured attitudes, behaviour, skills and techniques in co-operative curriculum research before and after the institute. The co-workers also rated themselves, on the same questionnaire, to show change, if any, in their own attitudes, behaviour and skills during the same period. In addition, the participants and their co-workers rated themselves on their influence upon others both before and after the institute. It has been assumed that, if the participants improved more than their co-workers who did not attend the institute, the difference must have been due to the effect of the institute upon the participants. The degree of significance of the difference has been determined in the usual manner. As a part of the evaluation scheme, the members were asked to list new curriculum research activities which the institute experiences had proved helpful in initiating, and to indicate any improvement made on already existing projects as a result of the institute experiences. In answer to a question as to which of the features of the institute should be included in the next institute, about one-third to one-half of the members who responded felt that the work groups, the special groups, the general sessions and the same general structure should be retained.

3. From the general results of the inventory, it appears that participants' self-ratings changed significantly in the post-test on the skills and techniques sub-scales. Not only are these changes significant statistically, but they are significantly greater changes than those shown by the "control" group, the co-workers. Changes of influence, on the other hand, do not appear significant, although the change of co-worker ratings on one sub-scale (ways of behaving) is significantly greater than that of participant ratings. Apparently participants did not think their own changes were communicated to the people they work with.

V. Appraisal of the experiment

1. Primarily descriptive rather than experimental, the institute (planned as the first of a series) had obvious shortcomings which are recognized, not the least of which is the subjectivity of the self-ratings of individual members and of the ratings of such members by the staff members of the institute.

2. To avoid or minimize such shortcomings, the following measures were being taken at the time the write-up of the institute was completed, namely: (a) the development of stable, valid means of scoring the various instruments, in order to provide dependable measures of member change, and resultant changes in the members' co-workers. To this end, scores from different instruments will be correlated to discover whether general change is evident, or whether a profile approach should be adopted. (b) When basic

measures of change are established, predicators of such change (factors associated with high or low amounts of change) will be located.

3. A Second Co-operative Curriculum Research Institute has been held, broadly similar to the first in rationale and design; it was attended by 59 participants and 12 staff members. A number of regional institutes are being planned.

4. Continued careful evaluation should help to indicate how effectively the school people who need skills to conduct co-operative research are getting them. "The hypothesis that lack of skills is the major stumbling block to the extension of co-operative research inquiry may not be sustained, but we are on our way to finding out."

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